Chesterfield County Growth Analysis

- **Archived Zoning Case System**
- **Development Potential Database**
- **Growth Phasing Model**

February, 2004

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Executive Summary
Chesterfield County Growth Analysis

The magnitude of growth in Chesterfield County, and the county's ability to effectively plan and provide related public services have been the focus of concern for many years. In February 2001, the Chesterfield County Board of Supervisors, the Planning Commission and county staff held a one-day retreat to discuss the impacts of growth and ways to effectively guide it. Of principal concern was the need to assess how much growth could take place based on adopted plans, and projecting the cost of building public facilities to serve that growth. In order to answer these questions, in April 2001, the Board authorized the Chesterfield County Growth Analysis.

The principal question that drives the Growth Analysis project is:

> *By following the recommendations of the comprehensive plan, how will the county grow and how much will the public facilities needed to serve that growth cost?*

As a result of the Growth Analysis project, for the first time, there is an answer to that question, along with important information about how growth will affect the county. Important project findings include:

- How and where Chesterfield will grow
- What facilities will be needed to serve that growth
- How much those facilities will cost
- How growth patterns affect the cost of public facilities

Key Growth Analysis Findings

1. **Under The Comprehensive Plan, the County Will More Than Double In Dwellings and Quadruple In Business Space By Plan Build-Out**

   Chesterfield County had approximately 102,000 dwellings on December 31, 2001. As the county develops, the number of dwellings will more than double, with about 215,800 households at build-out.* If the county achieves its economic development goals, the amount of business space will more than quadruple, from 61.5 million square feet of non-residential development to almost 250 million square feet by build-out.

2. **Significant New Growth Will Be Guided By Zoning Already In Place**

   There is a significant amount of vacant and "underutilized" land in Chesterfield County zoned for a more intensive use. This existing zoning offers significant growth potential, especially for residential development. If the existing vacant or underutilized land that is already zoned for residential growth develops to build-out, there are over 50,000 additional dwelling units that could potentially be built, even with no additional rezoning.

3. **Facilities Have Not Always Kept Up With Growth**

   While some types of public facilities in the county have kept pace with growth, there are others that have not kept up with growth in population and changing demographic

needs. Additionally, some facilities are skewed in their geographic distribution. In other words, while the county may have enough total facilities in some categories, they are not necessarily where they are needed. In order to meet existing facility level of service standards, the county would need to spend $1.15 billion on roads and $52 million on all other facilities to fill the "gap" that existed as of December 2001.

4. Facility Costs at Plan Build-out Are More Than $ 5.7 Billion, Most of Which Is Road Costs

If the county's public facilities level of service standards remain the same, the capital cost to serve new build-out development will be $5,721,000,000. Because more than 55 percent of this is road costs, road construction costs are the primary influencing factor in this analysis.

5. In Analyzing The Cost of Facilities, How the County Serves Its Citizens Is More Important Than Where Those Citizens Are Located

The Growth Analysis determined that public facilities in Chesterfield County are not evenly distributed, and future facility locations will in part be based on the location of existing facilities. The analysis also concluded that current level of service standards sometimes forced facility additions where no geographic element required them.

6. Level of Service Standards For Facilities Have A Greater Influence On Total Cost Than Does The Pattern Of Development

The Growth Analysis found that facility service levels and facility "gap" costs will have a greater influence on the total cost of facilities than does the future distribution of growth. When looking at the geographic distribution of facilities costs, the cost of roads (55 percent of total facilities costs) is the overwhelming factor.

7. With The Exception of Roads, the County's Financial Policies Can Support The Future Cost of Facilities

Analysis of the county’s policies that establish pay as you go funding levels and targeted debt ratios, combined with revenues from growth pay for growth philosophies such as cash proffers indicates the facility needs identified in the county's Public Facilities Plan, excluding roads, can be addressed through 2022.

8. Following The Comprehensive Plan Can Help Minimize Future Road Costs

The "gap" cost for roads was more than 1.15 billion dollars as of December 2001, all of which would need to come from public sources. The public build-out cost for roads is projected at 1.1 billion dollars to serve 113,800 more residential units and 187,437,000 square feet of business uses. By following the plan, future public road costs are less than what is needed to cover the gap, and future roads serve more units and business square footage than what currently exists in the county.

* For the purpose of the Growth Analysis, build-out is a maximum development scenario for Chesterfield County based on current zoning and the recommendations of the county land use plan. Under the current rate of development, build-out could take at least 50 or more years.

Chesterfield County Growth Analysis

Prepared By The Chesterfield County Planning Department
February 2004

Growth Analysis Project Team:

- Lane B. Ramsey, County Administrator
- M.D. "Pete" Stith, Deputy County Administrator
- Thomas E. Jacobson, Planning Director
- John McCracken, Transportation Director
- Craig Bryant, Utilities Director
- Glenn Larson, Assistant Director, Planning Department
- Sara Carter, Principal Planner, Planning Department
- Allan Carmody, Budget Manager, Budget and Management Department
- David Knapp, Principal Engineer, Utilities Department

Chesterfield County thanks the staff of Chmura Economics & Analytics, who assisted in the development and review of this report.

For more information about the Chesterfield County Growth Analysis, please contact Glenn Larson, Project Manager, at 804/748-1970 or Larsong@chesterfield.gov

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Table of Contents

Tables and Maps

I. Introduction and Overview

A. Purpose of the Growth Analysis

The purpose of the Chesterfield County Growth Analysis is to identify necessary infrastructure, public facilities, and projected costs to support the adopted land use plan for the entire County and identified sub-areas. In doing so, the Growth Analysis: 1) provides important data on existing development and future growth potential, 2) enables cost and facility analysis of comprehensive plan and large-scale zoning amendments and 3) creates new layers on the County's Geographic Information System (GIS) for future analysis, including existing land use, zoning and comprehensive land use plan data. Key elements of the Growth Analysis include: 1) an automated inventory of more than 4200 zoning case records, 2) a comprehensive database that calculates the development potential of property in Chesterfield County, and 3) an economic model that analyzes that growth potential and related future public facilities costs.

B. Background

The magnitude of growth in Chesterfield County, and the County's ability to effectively plan and provide related public services have been the focus of concern for many years. In February 2001, the Chesterfield County Board of Supervisors, the Planning Commission and county staff held a one-day retreat to discuss the impacts of growth and ways to effectively guide it. Of principal concern was the need to assess how much growth could take place based on adopted plans, and projecting the cost of building public facilities to serve that growth. In order to answer these questions, on April 25, 2001, the Board of Supervisors authorized the Chesterfield County Growth Analysis. Originally referred to by staff as a "growth phasing analysis," that term was incorporated into, and made a distinct modeling element of the larger Growth Analysis to more accurately depict the scope of analysis and value of all the data developed.

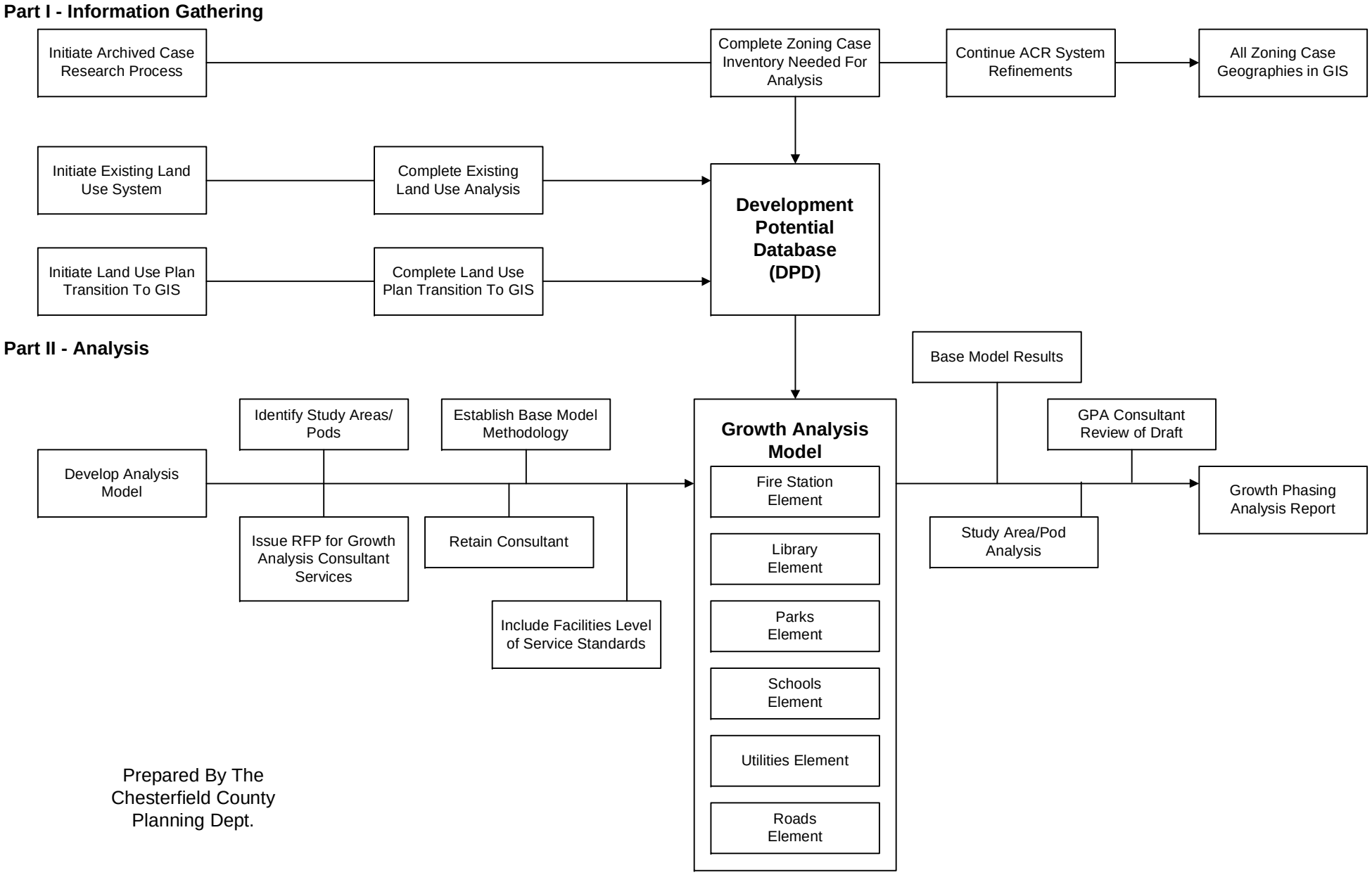
C. Major Growth Analysis Elements

The Chesterfield County Growth Analysis report emphasizes data tables and maps. The reason for this is that one of the prime purposes of the Growth Analysis is to provide an information foundation for a broad range of growth and related public facilities studies. The Growth Analysis project can be broken down into the following three major components, which are also illustrated in Chart I-A.

- **Archived Zoning Case System:** More than 4200 zoning case records have been scanned and referenced into the county's geographic information system (GIS) as part of the Growth Analysis project. The Archived Zoning Case System will realize significant improvement in staff's ability to research all future development proposals, further expediting the zoning, site plan and subdivision review processes.

- **Development Potential Database:** The development database created under the Growth Analysis Project will continue to be used as a resource for future land use analysis. Its links to the Archived Zoning Case System and GIS allow retrieval of detailed growth related information by geographic area, and will be a valuable resource in future comprehensive planning and zoning case review. The database has already

Chart I-A
Chesterfield County Growth Analysis



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been revised for 2002, and will be updated on a regular basis as new development proposals are approved. See Appendix D for more information.

- **Growth Phasing Model:** A facilities analysis "model" was used to develop the cost projections contained in this report. It takes data from the development potential database, and analyzes various growth options, broken down by study areas and larger consolidated "Pods." (See Map I-A and I-B) This model was evaluated and the results reviewed by a private consultant, Chmura Economics & Analytics.

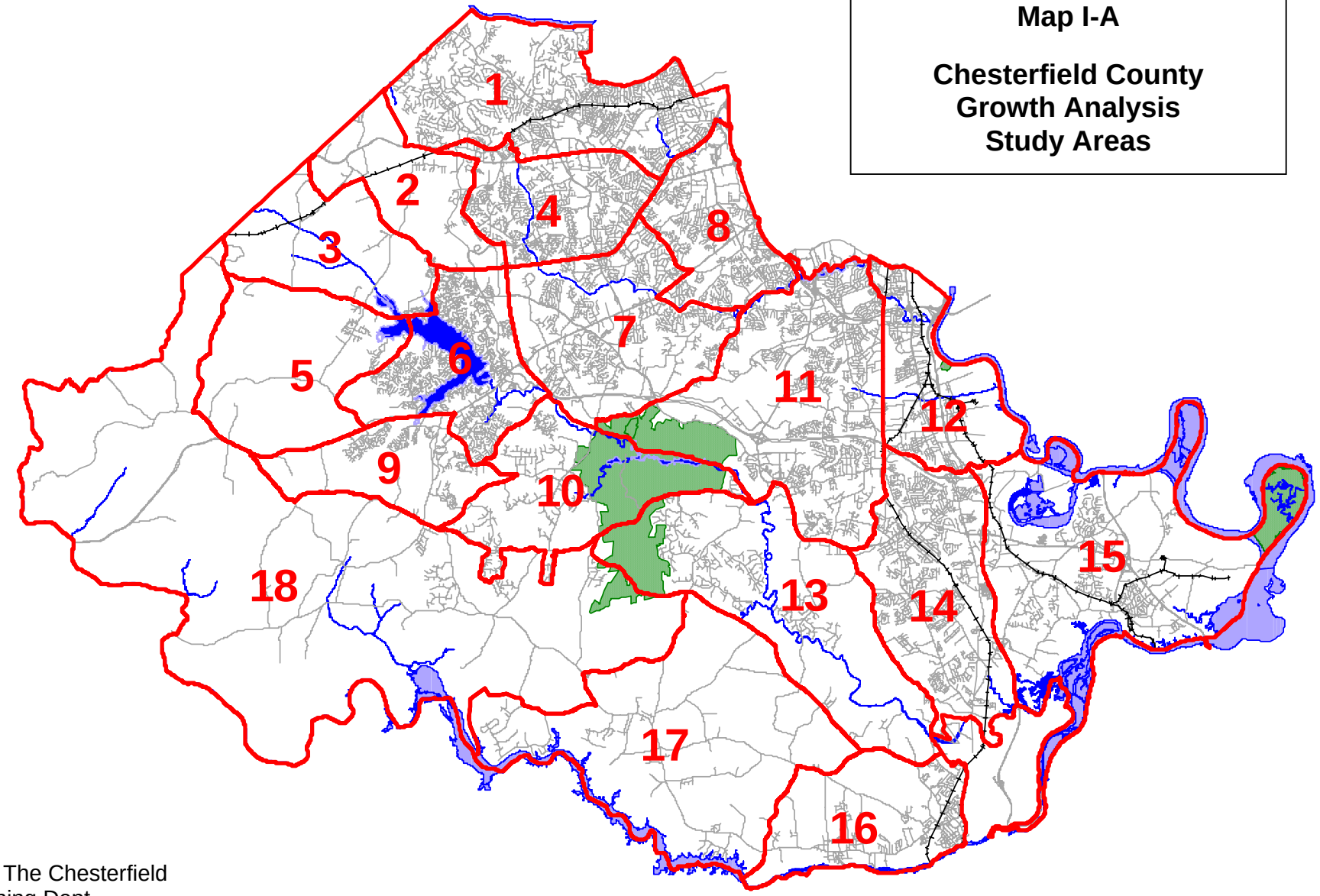
D. Important Considerations

Development of Chesterfield County's Growth Analysis presents many challenges due to its complexity and scope. Taking advantage of Geographic Information Systems (GIS) technology, the Growth Analysis, for the first time, provides a comprehensive "picture" of how the County could potentially grow based on existing land uses, vacant land already zoned for development and the recommendations of the County's land use plan. The Growth Analysis does not, however, provide answers for all growth-related questions. It is important to understand what this analysis can and cannot do. The following are some fundamental considerations.

- **"Test The Plan":** Per the instructions of the Board of Supervisors, the primary objective of the Growth Analysis is to "test the County's Comprehensive Plan to determine the extent of future growth and its impacts on infrastructure costs and public facility demands." The result is an analysis that identifies the comprehensive plan's "build-out" potential. For the purpose of the Growth Analysis, build-out is a maximum development scenario for Chesterfield County based on current zoning and the recommendations of the county land use plan. Under the current rate of development, build-out could take at least 50 or more years.
- **Project Timeframe:** The Growth Analysis uses December 31, 2001 as "base" for its existing conditions calculations. While two years have passed between then and completion, because of the magnitude of growth and cost projections, this time gap has little influence on this report's overall findings. The Development Potential Database has already been updated for 2002 (and soon for 2003), and these updates can be used for any future growth analysis.
- **Relationship To Other County Facilities Analyses:** During the three years of the Growth Analysis project, the county initiated work on annual revisions to its Capital Improvement Program and on a 2004 replacement to the 1995 Public Facilities Plan. While all these facilities analyses share common base data, each was prepared to address different contexts and long-term growth needs. Careful consideration of different timeframes and the scale of facilities needs analysis to be made before comparing what is said in each report. Because the 2004 update to the Public Facilities Plan had not been adopted by the time the Growth Analysis Report was published, some of its findings may differ from those in the Growth Analysis.
- **Quantitative Analysis (By The Numbers):** Over 106,000 individual parcels of land were analyzed for their growth potential. Because of the complexity of such an analysis, staff could not undertake detailed parcel-by-parcel surveys, but instead developed a series of growth potential assumptions based on a standard methodology.

Map I-A

Chesterfield County
Growth Analysis
Study Areas



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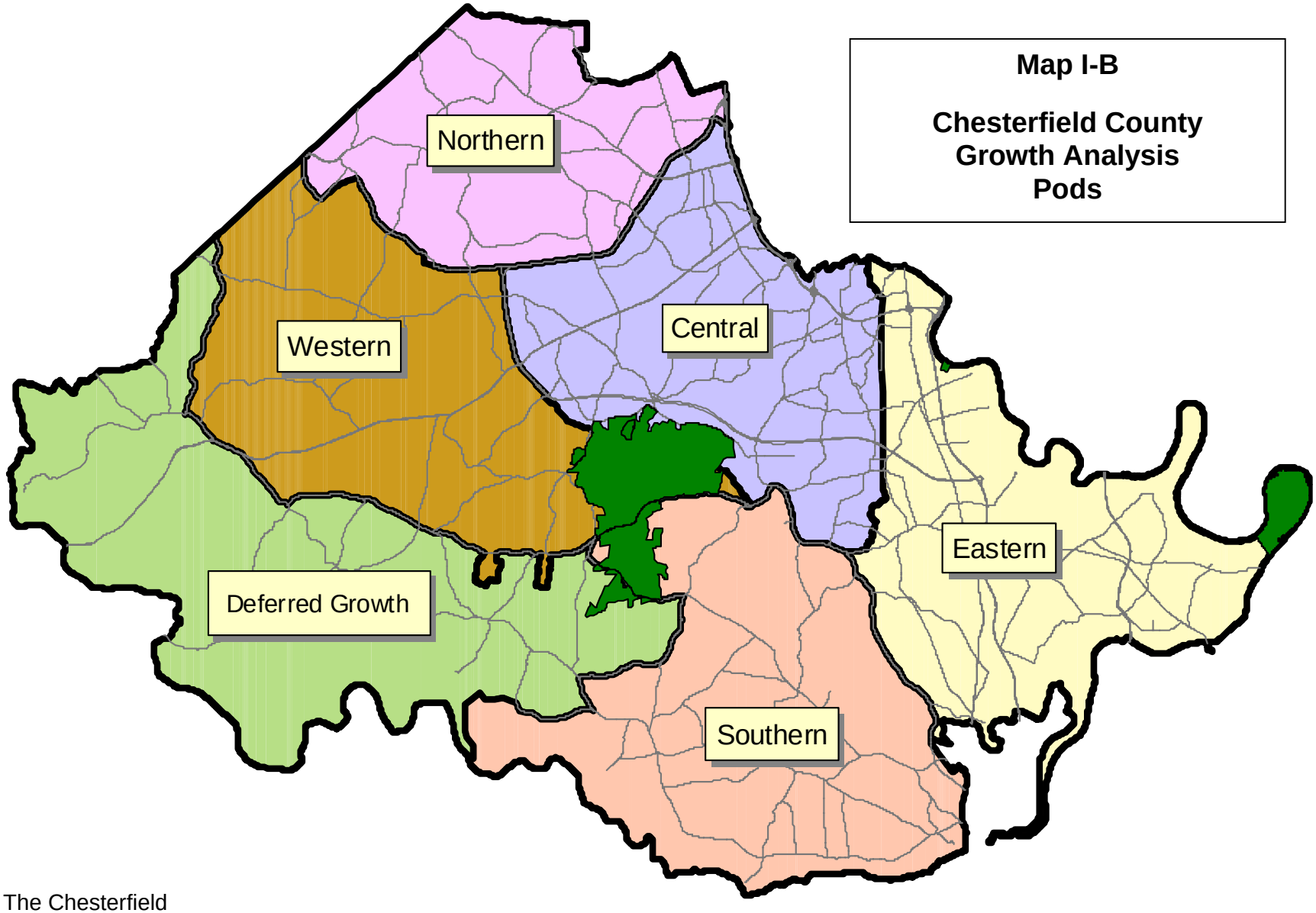
Map I-B

Chesterfield County Growth Analysis Pods



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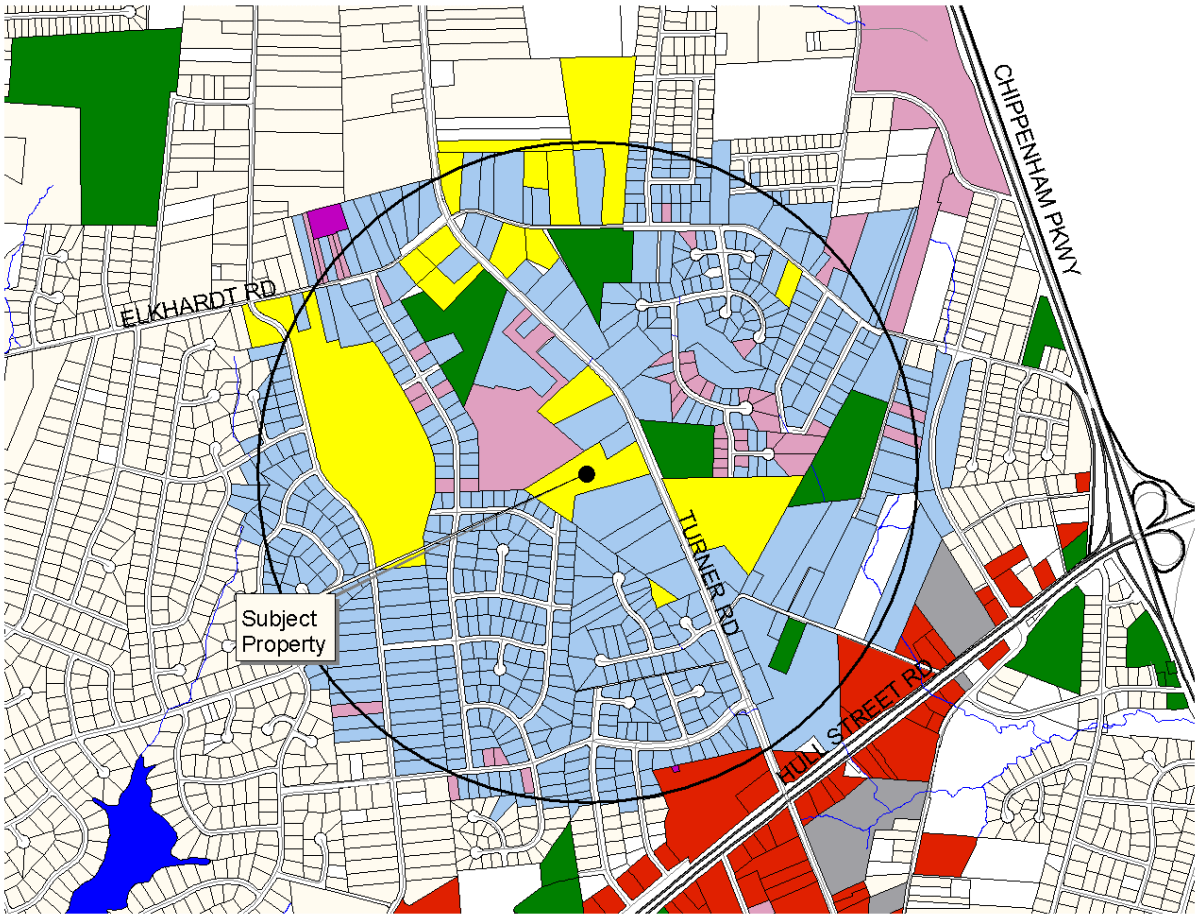
- **Costs In 2001 Dollars:** All cost calculations are in 2001 dollars. This analysis makes no attempt to forecast inflation by build-out.
- **Level of Service:** All facilities level of service calculations are based on those adopted as part of the county's 1995 Public facilities Plan.
- **Cost vs. Revenue:** The Growth Phasing Model only analyzes the cost of public facilities to serve current and projected demands. It does not analyze costs associated with staffing and operating new facilities. The model also does not analyze the revenue generating potential from the development of planned uses under a build-out scenario. As a separate exercise, current capital project funding policies were reviewed under assumed growth factors to test the county's ability to fund projected needs through 2022.
- **Macro vs. Micro, A Policy Level Tool:** Due to the nature of the facilities analyzed, cost projections in the Growth Phasing Analysis are best applied to large geographic sub-areas of the county. Because of the large service areas of some public facilities, such as high schools, the facilities cost model does not apply itself well to the analysis of small geographic areas.
- **Public And Private Sector Facilities Costs:** Some public facilities, like roads and utilities, are paid for by both public and private sector funds. These cost differences are incorporated into the analysis.
- **Recommendations:** The purpose of the final Growth Analysis report is to present analysis findings. No growth related recommendations will be made, as staff anticipates that decision makers and the public will need time to review the report's findings.

E. Related Growth Analysis Uses

The Growth Analysis is more than the sum of its parts, as the information gathered in its development has broad application to other county planning and capital improvement initiatives.

- **Land Use Analysis**: The Development Potential Database will continue to be used as a resource for future land use analysis. Its links to GIS allows retrieval of detailed information by geographic area. The database will be updated annually.
- **Land Use Plan:** The County's land use plan was incorporated as a GIS layer as part of the Growth Analysis process. This information will continue to be refined, and will eventually be established as the official land use plan for Chesterfield County.
- **Public Facilities Plan:** Staff is in the process of updating the adopted 1995 Plan For Public Facilities. The findings of the Growth Analysis were incorporated into this update.
- **Capital Improvement Program:** The County's CIP process will benefit from information gathered and analyzed by the Growth Analysis.
- **Cash Proffer Analysis:** Information from the Growth Analysis can be used in the development of cash proffer policy, including the potential use of differential cash proffers.
- **Zoning Case Analysis:** Though the GPA model has limitations for specific smaller scale site-based facilities cost analysis, Development Potential Database information

Map I-C



Existing and Potential Residential Unit Analysis

Color	Type	Number of Units
	Existing Units	580
	Vacant Parcels Zoned Residential	110
	Vacant Parcels Zoned A and Recommended By LUP For Residential	148

Example Only

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can be used in zoning staff reports to determine the amount of existing and proposed development adjacent to sites proposed for development. See Map I-C.

F. The Experience of Other Jurisdictions

While the fiscal impact analysis of future growth has been an important planning tool used by many jurisdictions across the United States, its application is more limited in Virginia. The best Virginia example of the use of facilities cost analysis in land use planning is Loudoun County. Below is an excerpt from Loudoun County's comprehensive plan explaining how their fiscal impact model works:

> "Loudoun County's Fiscal Impact Analysis Technical Review Committee, comprised of citizen representatives supported by County and School staff, provides annual forecasts of development activity and service costs over twenty years. The Committee's Annual Update of the Demographic, Revenue, and Expenditure Modules and 20-Year Growth Scenarios is based on a fiscal impact model developed for the County in the early 1990s.
>
> Service Plans and Levels for each department and agency that are adopted by the Board of Supervisors establish the number of facilities that the County will build. The Service Plans and Levels establish service delivery levels and capital facility standards based upon specific demographic factors (per capita, per square foot, etc.). The Board of Supervisors selects the service level.
>
> Based on the County's projected population growth and the adopted service levels, a ten-year Capital Needs Assessment is prepared to project the type and number of capital facilities that will be needed to serve the public. With that longer view in mind, the Board then adopts a six-year Capital Improvement Program that schedules the financing and construction of public facilities."

Chesterfield County staff traveled to Loudoun County in August 2003 and met with Loudoun County staff, discussing Loudoun's growth management strategy and the use of the their fiscal impact model.

II. What The Growth Analysis Shows

A. How and Where Chesterfield Will Grow

The Development Potential Database (DPD) component of the Chesterfield County Growth Analysis provides a wealth of information on future development potential. The following is a summary analysis of both residential and business development potential to county build-out. More detailed information is found in the accompanying tables and maps in this section, and in Appendix A, and a glossary of terms used is on page 28.

1. Residential Development

Below is a summary of projected residential development in the county to comprehensive plan build-out, based on the growth projections made in the Development Potential Database.

Dwellings as of December 31, 2001:	102,000	
Additional Dwellings at "Build-out"		Share of "build-out" growth
• Dwellings that could be built on vacant land already zoned for residential development:	46,900	41%
• Dwellings that could be built on vacant land zoned for agriculture but recommended in the plan for residential development:	41,900	37%
• Additional dwellings that could be built on currently underutilized land:	25,000	22%
Total dwellings at build-out:	215,800	

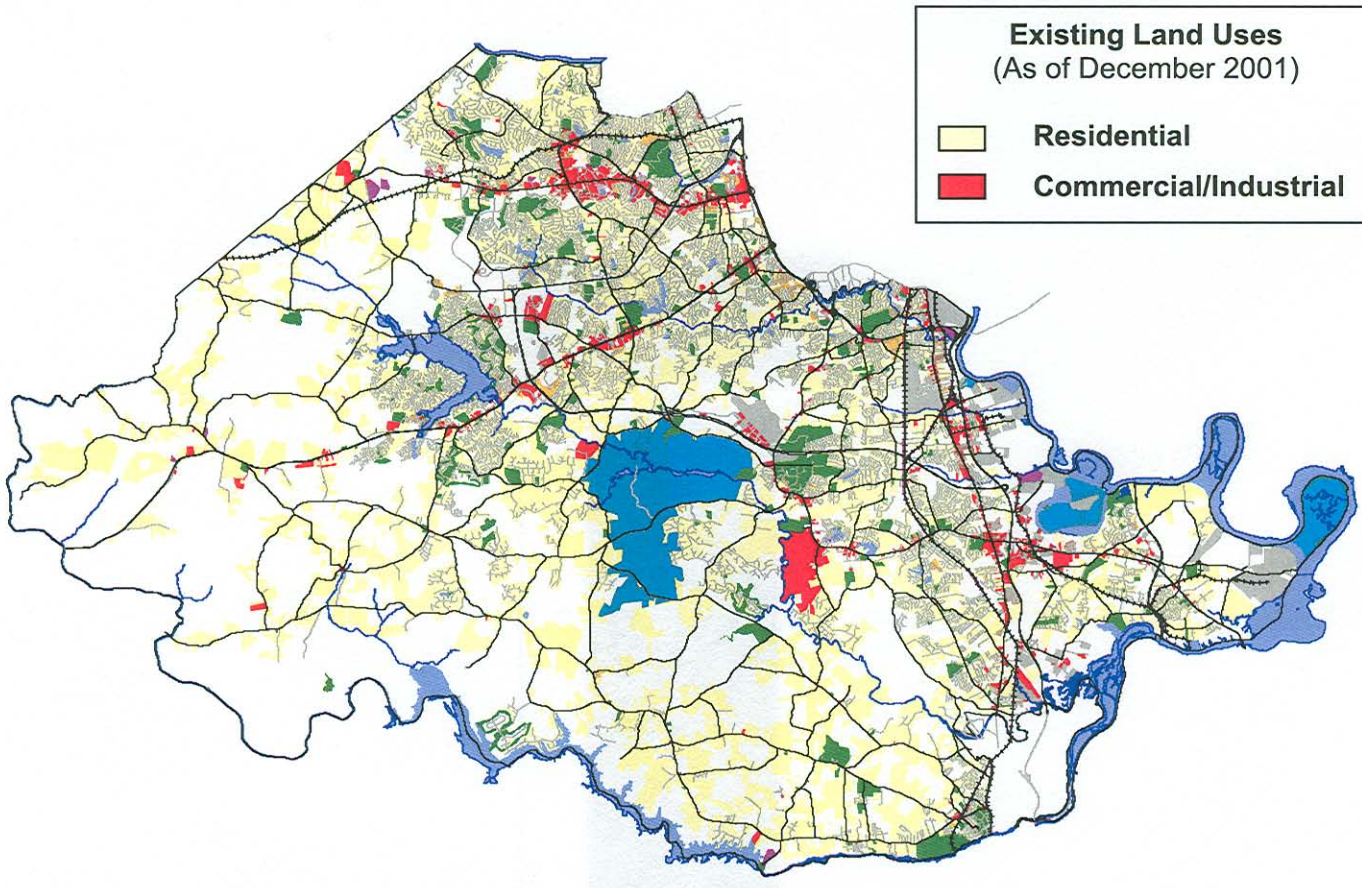
More detail on residential development trends is found in Table II-A1 and Table II-A2, and in Maps II-A and II-B. Table II-A1 provides a count of existing dwellings (as of 12/31/01 by Study Area and Pod, and Table II-A2 provides more detail on residential development potential broken down by zoning and land use plan classifications.

While the Growth Analysis breaks the county down into 18 study areas, a better illustrative way of looking at growth is through consolidating these areas into larger "Pods." Map II-C shows the boundaries of those pods, the number of dwellings in each and the number of potential additional dwellings by build-out.

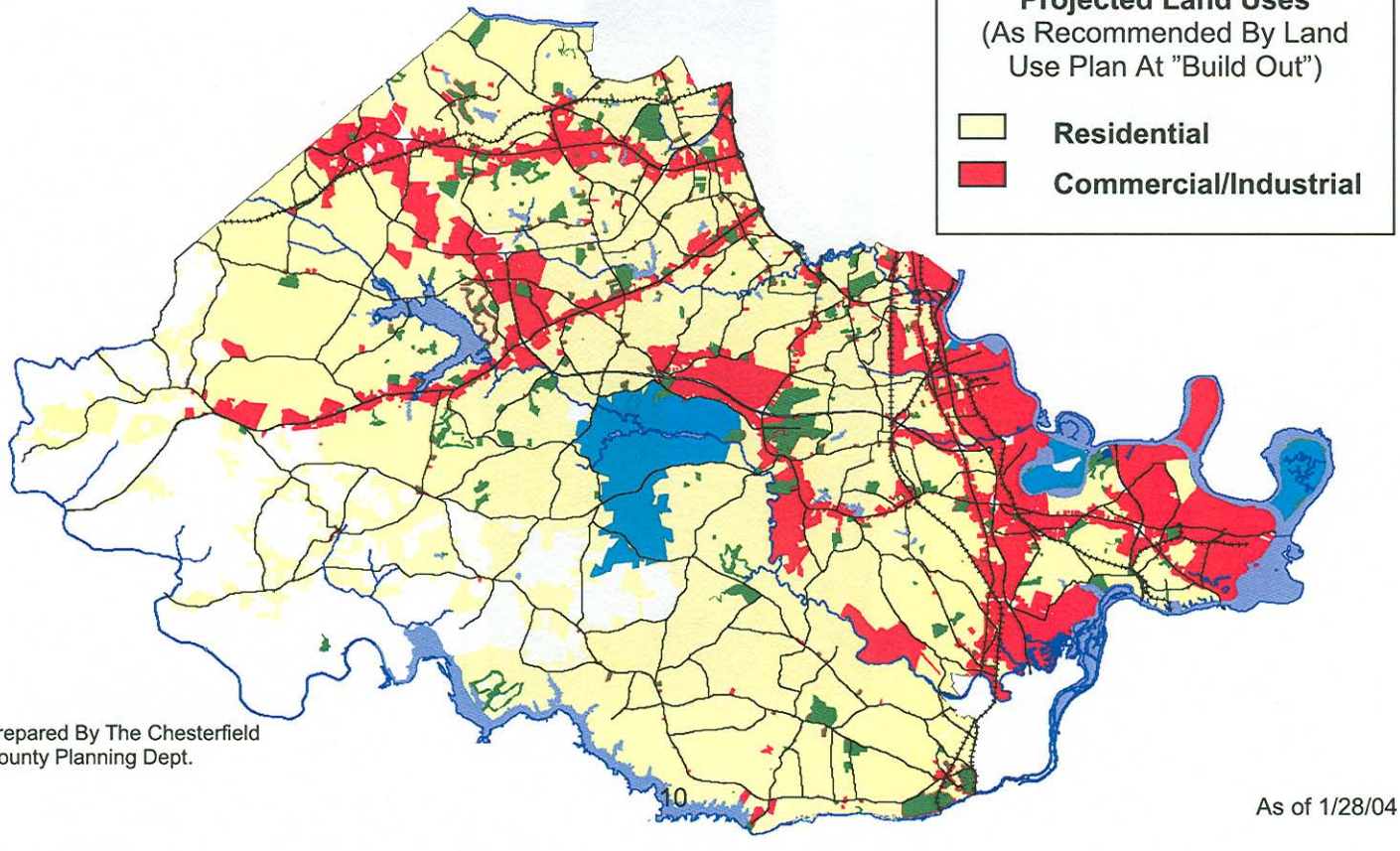
Residential Development Summary:

As shown in Maps II-A and II-B, the pattern of projected residential development in Chesterfield County to build-out reflects today's existing zoning and land use plan recommendations. There is even some additional residential development projected for the county's Rural Conservation Area, as some of the area was zoned for residential development prior to the 1991 adoption of the Southern and Western Area Plan. Map

Map II-A



Map II-B



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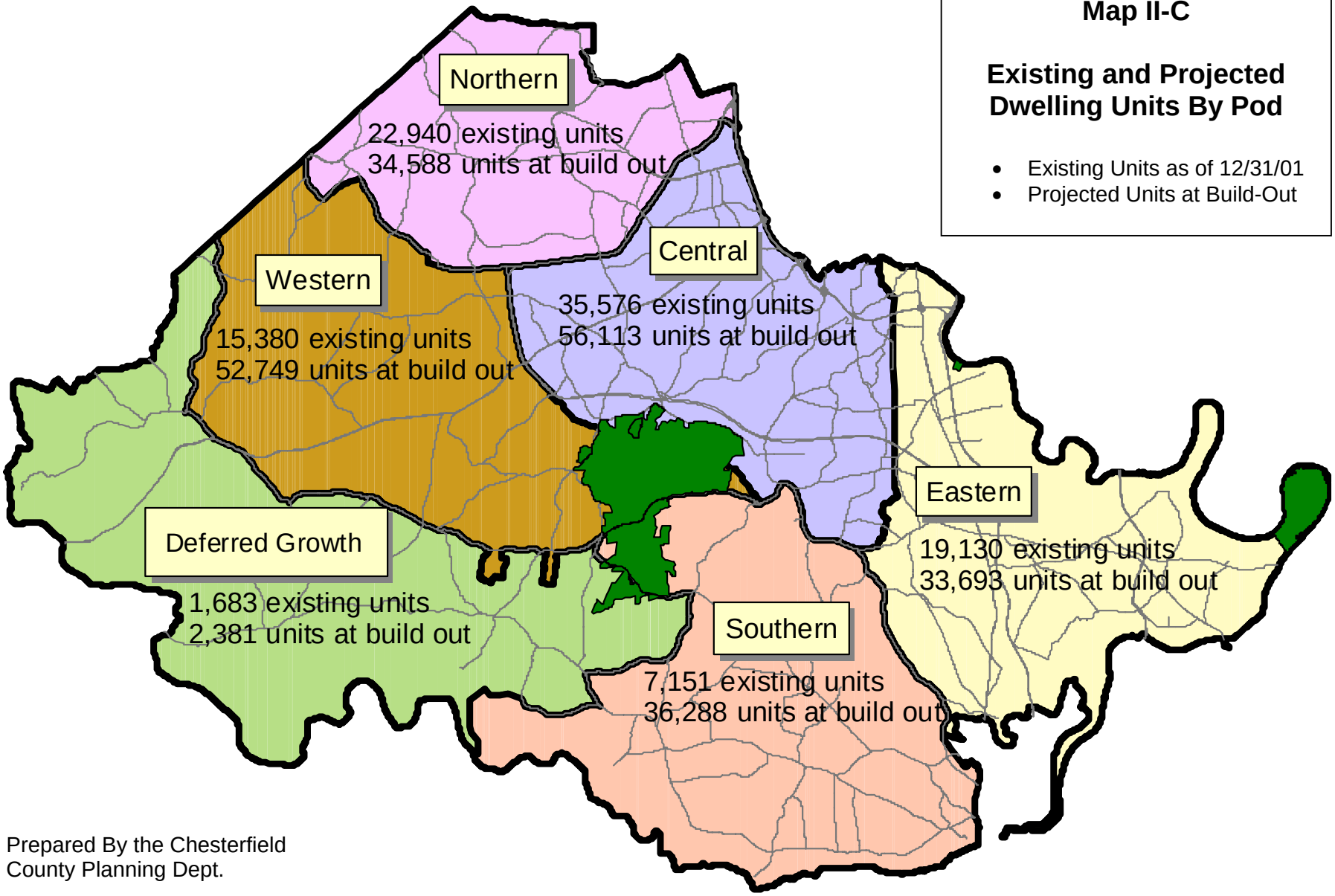
Map II-C

Existing and Projected Dwelling Units By Pod

- Existing Units as of 12/31/01
- Projected Units at Build-Out



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II-D shows that there is currently (as of 12/31/01) a large amount of residentially zoned vacant land scattered throughout the county, not necessarily confined to the "suburban fringe."

2. Business Development

Below is a summary of projected business development in the county, based on the growth projections made in the Development Potential Database. Business, for the purpose of this analysis, is defined as both commercial (office, retail, etc.) and industrial uses.

Business Sq. Feet as of December 31, 2001:	61,470,000	
Additional Business at "Build-out"		Share of "build-out" growth
• Business that could be built on vacant land already zoned for business development:	88,166,000	47%
• Business that could be built on vacant land zoned for agriculture but recommended in the plan for business development:	69,682,000	37%
• Additional business that could be built on currently underutilized land:	29,409,000	15%
Total business sq. feet at build-out	248,907,000	

More detail on business development trends is found in Table II-A1, and in Maps II-B and II-C.

Business Development Summary:

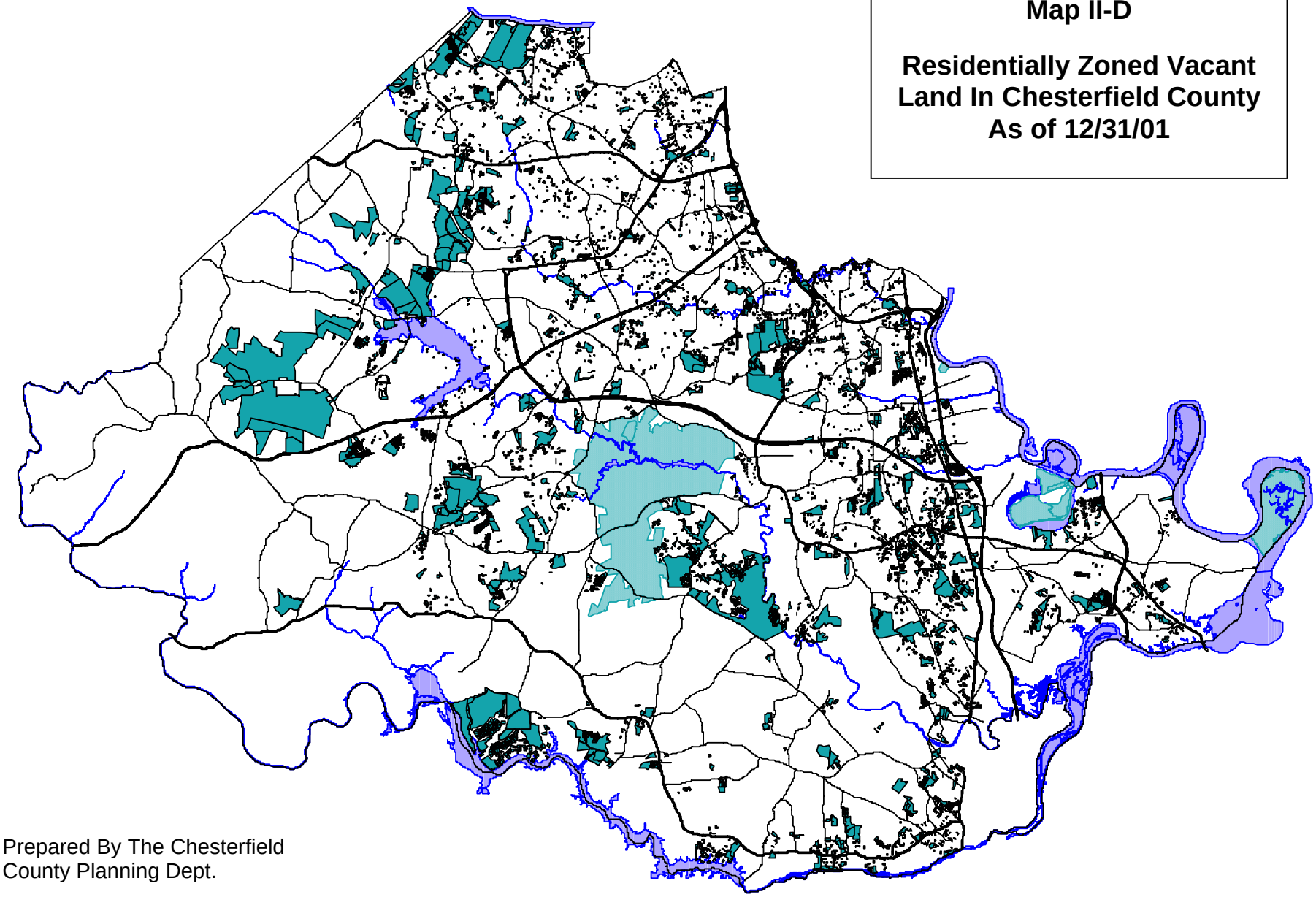
As with projected residential development, the pattern of projected business development in Chesterfield County to build-out reflects today's existing zoning and land use plan recommendations. The significant growth in projected business square footage at build-out can in part be attributed to a strategic effort to promote economic development in Chesterfield's comprehensive plan. This is reflected in the relatively large amount of land recommended for business and industrial uses in both the Consolidated Eastern Area Plan (2002) and the Route 288 Corridor Plan (1999).

B. Facilities Needed To Serve Growth

The Growth Phasing Model reviewed facility needs as of December 31, 2001 to see how well the county had achieved its level of service standards to date. This is called the "gap" analysis. Gap figures state the need for facilities according to the adopted level of service standard in the County's comprehensive plan. Once all facility areas were starting from their stated level of service, the Growth Phasing Model was used to see what facilities would be needed as development towards the eventual plan build-out of the county occurred. The following summary shows needs as of December 31, 2001 (the Gap analysis), as well as projected facility needs as plan build-out occurs.

Map II-D

Residentially Zoned Vacant Land In Chesterfield County As of 12/31/01



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Facility Needs

Facility	Existing at 12/31/01	Gap at 12/31/01	Additional Need By Build-Out	Total Facilities Need	Total Facilities By Build-Out
Fire Stations	17	5	37	42	59
Libraries	9	1	14 (7 new, 7 add)	7	16
Community Parks	11	3	12	15	26
Regional Parks	6	0	5	5	11
High Schools	9	0	9	9	18
Middle Schools	11	0	11	11	22
Elementary Schools	36	1	31	32	68
Utilities	-	0	$952 Million*	$952 Million*	-
Roads	-	$1.152 Billion*	$1.996 Billion*	$3.148 Billion*	-

*Combined public and private costs. The "linear" needs for roads and utilities were not calculated as part of the Growth Phasing Analysis.
Note: Gap needs are as of December 2001. The draft update to the county's Public Facilities Plan under review in January, 2004 identified facility needs as of September 2003.

More detail on facilities need is found in Table II-B1, and in Appendix B.

Facility Needs Summary:

Below is a summary of existing county public facilities needs identified by the Growth Phasing Model as of December 2001 and projected facility needs by build-out. More detailed explanations and methodology can be found in Appendix D.

a. **Fire Stations:** Three stations were funded through the county's Capital Improvements Program (Rivers Bend, Winterpock and Reams Road) and are now in various stages of the development process. Two additional stations would be needed to fill the gap. By build-out, The Growth Phasing Model projects the county will need 37 additional fire stations. This is in addition to the 17 existing, the three in progress, and the additional two needed to fill the December 2001 gap in service.

b. **Libraries**: To fill the December 2001 gap in level of service standards, one library at 20,000 square feet was needed, leaving a 3,465 square foot gap in service levels. At build-out, the Growth Phasing Model projects the county will need seven additional libraries at 20,000 square feet each. These include branches that have been specifically delineated in the libraries system's long term planning: Magnolia Green, Winterpock, Powhite/Genito, Harrowgate, Huguenot-Robious. There are two additional branches that will be needed: a southern branch, west of Matoaca, and a branch along Rt. 288, near the center of the county. Finally, the Growth Phasing Model identifies seven existing branches for expansion: Clover Hill, Ettrick/Matoaca, Meadowdale, Enon, Bon Air, Midlothian, and Central.

c. **Parks:** To meet the established level of service standard for community parks, three additional parks totaling 100 acres are required. There is a small deficit for regional scale parks (12 acres), but not a large enough gap to justify an additional regional park. There

was a surplus of overall park acreage as of December 2001. By build-out, the Growth Phasing Model projects there will be a need for 12 additional 50-acre community parks. Additionally, there will be a need for five regional parks, varying in size between 260 and 284 acres.

d. **Schools:** The Growth Phasing Model identifies a December 2001 gap equivalent to one elementary school. The system, as a whole, had enough capacity as of December 2001, but there was not enough capacity where the need exists. There is no existing middle or high school gap as of December 2001. At build-out, there will be a need for 31 additional elementary schools. By build-out, the Growth Analysis Model projects a need for eleven new middle schools. The Growth Analysis Model projects Chesterfield County will also need nine new high schools by build-out.

e. **Utilities:** The size and location of the major water and wastewater improvements in the Chesterfield County Utilities Department's Water and Wastewater Facilities Plan were incorporated into the Growth Phasing Model. There is no gap in county water and wastewater utilities as of December 2001. Though the Growth Phasing Model does not identify a linear measure for water and sewer lines, it projects a $952 million need for water and wastewater utilities by build-out.

f. **Roads:** The costs of the road improvements to accommodate projected traffic volumes were calculated based on the level of service standards and current highway construction costs. Though the Growth Phasing Model does not identify a linear measure for the miles of roads the county needs, it identifies a December 2001 needs gap of more than $1.15 billion. By build-out, road costs are projected to exceed $3.1 billion (gap plus build-out costs).

C. How Much Facilities Will Cost

Facility needs were determined by using adopted level of service standards (as stated in the 1995 Public Facilities Plan or by using adopted policy standards for utility or road service). Costs for facilities were determined by the Budget Department, using recent construction projects as a guide. Because land and facility costs vary, averages were used.

There are several categories of cost determinations that were made. These are based on the facility needs that are reviewed above. They include gap vs. build-out, and public versus private costs. Private costs only relate to developer improvements to the utility and road systems. Private costs do not include proffer contributions, as these are varied. They include major roads and utilities that, by current policy, are constructed by the private sector. All costs for fire stations, libraries, parks and schools are thus considered public costs.

The following summary table shows public and private facility costs for the gap as of December 2001, and countywide land use plan build-out.

Facility Costs - Combined Public/Private (In 2001 Dollars)

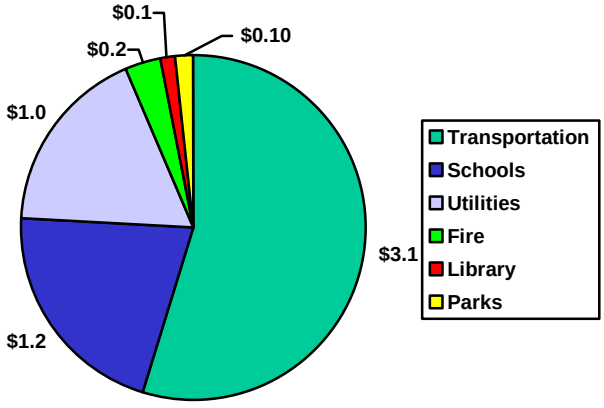
Facility	Gap at 12/31/01	Additional Cost By Build-out	Total Cost
Fire Stations	$21,300,000	$166,500,000	$187,800,000
Libraries	$10,252,400	$89,444,200	$99,696,600
Community Parks	$6,962,900	$40,594,300	$47,557,200
Regional Parks	$0	$41,111,800	$41,111,800
High Schools	$0	$520,500,000	$520,500,000
Middle Schools	$0	$274,000,000	$274,000,000
Elementary Schools	$13,500,000	$436,500,000	$450,000,000
Utilities	$0	$952,100,000*	$952,100,000
Roads	$1,151,828,000	$1,996,005,100**	$3,147,833,100
Total	$1,203,843,300	$4,516,755,400	$5,720,598,700

*Public sector build-out cost for Utilities is $219 million.
**Public sector build-out cost for Roads is $1.091 billion.

More detail on projected facilities costs is found in Table II-C1, and in Appendix C.

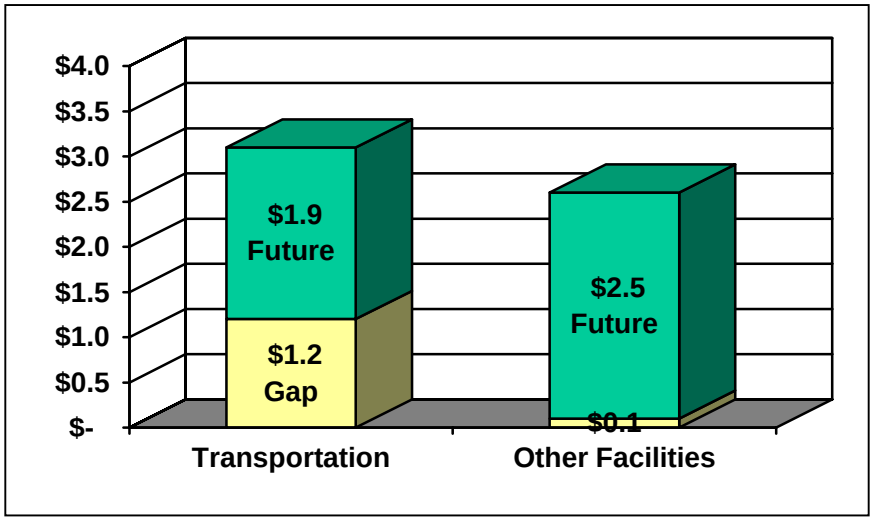
Facilities Cost Summary:

As shown in the chart below, the total cost of building new Chesterfield County public facilities is projected to be more than $5.7 billion by build-out.



More than half (55 percent) is road (transportation) costs. In the chart below, transportation costs are separated out and compared with all other facilities costs. While these are big

numbers, build-out is at least fifty years off. Keeping that in perspective, and by breaking the costs down to get a better understanding, it becomes clearer that these facility costs are manageable. The yellow represents "gap" costs, the amount of money needed to bring facilities up to current service level standards, while the green represents future public facilities costs. With the exception of transportation costs, the existing "gap" for all other public facilities represents a relatively small share of all public facilities needs, much of it already addressed in the current Capital Improvement Program. The $2.6 billion total for all other facilities is a manageable cost addressed through future capital improvement funding.



D. How Growth Patterns Affect the Cost of Public Facilities

The table below outlines total Growth Phasing Analysis facilities cost projections by Pod area. The following table and map show that, on a cost per dwelling basis, the Growth Phasing Analysis identified facilities cost differences in different parts of the county. Because the cost of roads represents such a significant cost in the Growth Phasing Analysis, a build-out cost projection minus roads is also provided.

Total Cost

Pod	Residential Growth Potential (Dwellings)	"Gap" Cost Per Existing Dwelling (12/31/01)	"Build-out" Cost Per New Dwelling (Private/Public)	Total Cost Per All Dwellings at "Build-out*"	"Build-out" Cost Per New Dwelling Minus Road Costs
Northern	34,588	$ 9,200	$ 37,500	$ 18,800	$ 17,800
Western	52,749	$ 7,500	$ 32,600	$ 25,300	$ 23,100
Central	56,113	$ 12,600	$ 40,600	$ 22,900	$ 21,500
Eastern	33,693	$ 19,500	$ 50,800	$ 33,000	$ 28,900
Southern	36,288	$ 7,300	$ 30,600	$ 26,100	$ 18,600
Deferred Growth	2,381	$ -	$ 495,800	$ 145,400	$ 300
Total	215,812	$ 11,800	$ 39,600	$ 26,500	$ 22,700

*Includes Gap Costs

It is important to note that for roads and utilities, the cost shown in one area may reflect development taking place in another. For example, the cost of roads in the Central Pod, and the subsequent per dwelling cost shown in this table, reflect the cost of roads that need to be built to not only serve the dwellings built in that Pod, but to serve road users who live in other areas.

More detail on projected Pod costs is found in Table II-C1, and in Appendix C. Map II-E shows build-out costs per dwelling by Pod.

Growth Pattern Summary:

While the total cost of roads is the primary factor in analyzing growth patterns, some conclusions can be made by looking at facilities costs per dwelling with road costs factored out. Minus road costs, build-out costs in the northern, eastern and southern pods are marginally less expensive than the Western and Eastern Pods.

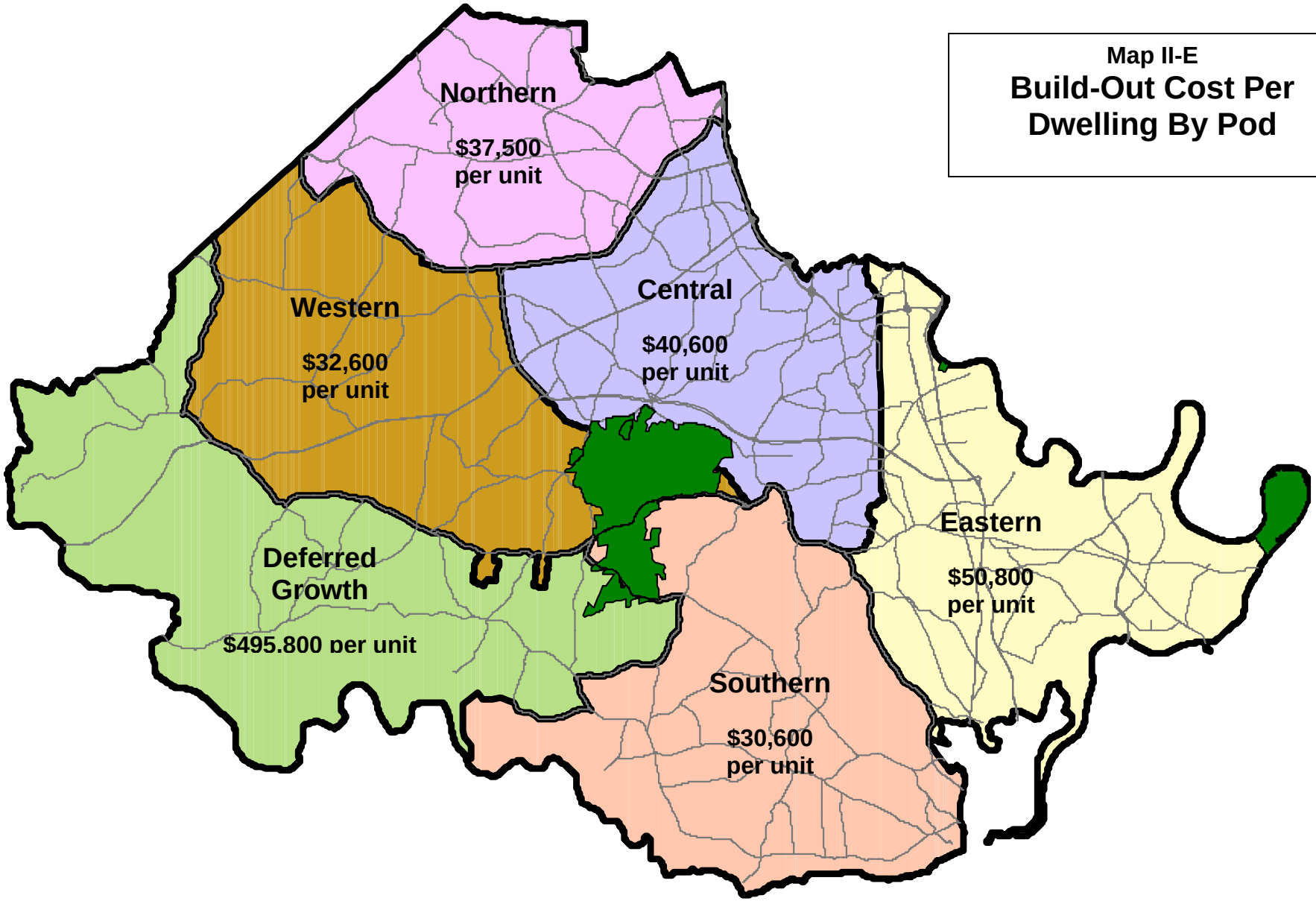
E. Financial Policies For Providing Public Facilities

The Growth Phasing Analysis model only analyzes the cost of public facilities to serve current and projected demands. It does not analyze costs associated with staffing and operating new facilities. The model also does not analyze the revenue generating potential from the development of planned uses under a build-out scenario.

As a separate exercise, current capital project funding policies were reviewed under assumed growth factors to test the county's ability to fund projected needs through 2022. Analysis of the county's policies that establish pay as you go funding levels and targeted debt ratios, combined with revenues from growth pay for growth philosophies such as cash proffers indicates the facility needs identified in the public facilities plan, excluding roads, can be addressed through 2022. Funding for these needs could be provided both on a pay as you basis (38 percent) and through debt financing (62 percent).

Map II-E

Build-Out Cost Per Dwelling By Pod



Prepared By The Chesterfield
County Planning Dept.

1/29/04

Table II-A1
Residential and Commercial Growth Summary

	Dwelling Units			Business Square Footage		
Area	Dwellings as of 12/31/01	Additional Dwellings By Build-Out	Total Dwellings By Build-Out	Business Square Footage as of 12/31/01	Additional Square Footage By Build-Out	Total Square Footage By Build-Out
1	12,400	4,200	16,600	6,913,000	5,484,000	12,397,000
2	700	4,500	5,200	453,000	29,943,000	30,396,000
3	300	12,200	12,500	9,000	2,987,000	2,996,000
4	9,900	3,000	12,900	5,877,000	2,557,000	8,434,000
5	500	13,200	13,700	61,000	5,875,000	5,936,000
6	10,300	3,500	13,800	2,199,000	9,142,000	11,341,000
7	10,000	7,100	17,100	3,062,000	15,757,000	18,819,000
8	10,200	2,500	12,700	5,675,000	5,363,000	11,038,000
9	2,100	6,400	8,500	209,000	3,175,000	3,384,000
10	2,200	2,000	4,200	0	0	0
11	15,400	10,900	26,300	5,017,000	16,848,000	21,865,000
12	4,800	2,000	6,800	16,905,000	13,788,000	30,693,000
13	2,000	8,700	10,700	794,000	11,101,000	11,895,000
14	10,100	8,700	18,800	4,393,000	12,011,000	16,404,000
15	4,200	3,800	8,000	9,390,000	53,085,000	62,475,000
16	3,500	10,900	14,400	325,000	303,000	628,000
17	1,700	9,500	11,200	125,000	6,000	131,000
18	1,700	700	2,400	63,000	12,000	75,000
Total	102,000	113,800	215,800	61,470,000	187,437,000	248,907,000

Pod	Dwellings as of 12/31/01	Additional Dwellings By Build-Out	Total Dwellings By Build-Out	Business Square Footage as of 12/31/01	Additional Square Footage By Build-Out	Total Square Footage By Build-Out
Northern	23,000	11,700	34,700	13,243,000	37,984,000	51,227,000
Western	15,400	37,300	52,700	2,478,000	21,179,000	23,657,000
Central	35,600	20,500	56,100	13,754,000	37,968,000	51,722,000
Eastern	19,100	14,500	33,600	30,688,000	78,884,000	109,572,000
Southern	7,200	29,100	36,300	1,244,000	11,410,000	12,654,000
Deferred Growth	1,700	700	2,400	63,000	12,000	75,000
Total	102,000	113,800	215,800	61,470,000	187,437,000	248,907,000

Rounded to the nearest 100 units, and nearest 1000 sq. ft.

For expanded data, see Appendix A

Source: Chesterfield County Planning Dept.

Table II-A2
Total Dwelling Unit Development Potential

Zoning and Land Use Plan	On Vacant Land		On Underutilized Land		
	Vacant Lots	Projected Units	Underutilized Lots	Projected Underutilized Units	Total Res. Unit Growth Potential
R-MF	7	900	1	100	1,000
MH-1	6	100	-	-	100
MH-2	8	400	-	-	400
R-TH	389	600	1	100	700
R-7	4,352	13,300	36	1,500	14,800
R-9	1,080	13,400	7	500	13,900
R-12	963	5,300	9	800	6,100
R-15	2,041	4,800	16	400	5,200
R-25	681	3,400	13	100	3,500
R-40	310	1,100	16	200	1,300
R-88	197	700	1	-	700
O-2	236	1,700	-	-	1,700
C-4	1	500	-	-	500
C-3	2	600	-	-	600
I-1	1	100	-	-	100
Subtotal	10,274	46,900	100	3,700	50,600
A					
Res 0.5	893	5,700	203	3,200	8,900
Res 1.0	22	200	5	100	300
Res 1.5	146	900	19	400	1,300
Res 2.0	420	17,300	120	6,200	23,500
Res 2.5	794	12,500	129	8,700	21,200
Res 4.0	658	5,100	51	2,400	7,500
Res 7.0	6	-	-	-	-
Res 7.0 Plus	15	200	1	300	500
Subtotal	2,954	41,900	528	21,300	63,200
Total	13,228	88,800	628	25,000	113,800

Projections rounded to the nearest 100 units.

Source: Chesterfield County Planning Department

Table II-B1
Needs and Costs For Selected Facilities

Facility Needs

	A	B	C	D =B+C	=A+B+C
Facility	Existing at 12/31/01	Gap at 12/31/01	Additional Need By Build-Out	Total Need (Gap + Build-Out)	Total Facilities By Build-Out
Fire Stations	17	5	37	42	59
Libraries	9	1	14 (7 new, 7 add)	15 (7new, 8 add)	16
Community Parks	11	3	12	15	26
Regional Parks	6	0	5	5	11
High Schools	9	0	9	9	18
Middle Schools	11	0	11 incl. CHHS conv.	11 incl. CHHS conv.	22
Elementary Schools	36	1	31	32	68
Utilities*	-	-	-	-	-
Roads*	-	-	-	-	-

For expanded data, see Appendix B

Source: Chesterfield County Planning Dept.

Table II-C1
Facility Cost Summary Totals

Total Cost - In Millions of Dollars

Facility	Gap at 12/31/01	Additional Need By Plan Build-Out	Total Plan Build-Out Cost	Share
Fire Stations	$ 21,300,000	$ 166,500,000	$ 187,800,000	3%
Libraries	$ 10,252,400	$ 89,444,200	$ 99,696,600	2%
Community Parks	$ 6,962,900	$ 40,594,300	$ 47,557,200	1%
Regional Parks	$ 0	$ 41,111,800	$ 41,111,800	1%
High Schools	$ 0	$ 520,500,000	$ 520,500,000	9%
Middle Schools	$ 0	$ 274,000,000	$ 274,000,000	5%
Elementary Schools	$ 13,500,000	$ 436,500,000	$ 450,000,000	8%
Utilities	$ 0	$ 952,100,000	$ 952,100,000	17%
Roads	$ 1,151,828,000	$ 1,996,005,100	$ 3,147,833,100	55%
Total	$ 1,203,843,300	$ 4,516,755,400	$ 5,720,598,700	100%

Total Public Sector Cost - In Millions of Dollars

Facility	Gap at 12/31/01	Additional Need By Plan Build-Out	Total Plan Build-Out Cost	Share
Fire Stations	$ 21,300,000	$ 166,500,000	$ 187,800,000	5%
Libraries	$ 10,252,400	$ 89,444,200	$ 99,696,600	2%
Community Parks	$ 6,962,900	$ 40,594,300	$ 47,557,200	1%
Regional Parks	$ -	$ 41,111,800	$ 41,111,800	1%
High Schools	$ -	$ 520,500,000	$ 520,500,000	13%
Middle Schools	$ -	$ 274,000,000	$ 274,000,000	7%
Elementary Schools	$ 13,500,000	$ 436,500,000	$ 450,000,000	11%
Utilities	$ -	$ 219,200,000	$ 219,200,000	5%
Roads	$ 1,151,828,000	$ 1,091,133,400	$ 2,242,961,400	55%
Total	$ 1,203,843,300	$ 2,878,983,700	$ 4,082,827,000	100%
				71%

Total Private Sector Cost - In Millions of Dollars

Facility	Gap at 12/31/01	Additional Need By Plan Build-Out	Total Plan Build-Out Cost	Share
Fire Stations	$ 0	$ 0	$ 0	0%
Libraries	$ 0	$ 0	$ 0	0%
Community Parks	$ 0	$ 0	$ 0	0%
Regional Parks	$ 0	$ 0	$ 0	0%
High Schools	$ 0	$ 0	$ 0	0%
Middle Schools	$ 0	$ 0	$ 0	0%
Elementary Schools	$ 0	$ 0	$ 0	0%
Utilities	$ 0	$ 732,900,000	$ 732,900,000	45%
Roads	$ 0	$ 904,871,700	$ 904,871,700	55%
Total	$ 0	$ 1,637,771,700	$ 1,637,771,700	100%
				29%

Source: Chesterfield County Planning Dept.

Table II-D1
Pod Cost Summary

Total Cost

POD	Residential Growth Potential (Dwellings)	With All Facilities Costs: "Gap" Cost Per Existing Dwelling (12/31/01)	With All Facilities Costs: "Build Out" Cost Per New Dwelling (Private/Public)	With All Facilities Costs: Total Cost Per All Dwellings at "Build Out*"	Without Road Costs: "Gap" Cost Per Existing Dwelling (12/31/01)	Without Road Costs: "Build Out" Cost Per New Dwelling (Private/Public)	Without Road Costs: Total Cost Per All Dwellings at "Build Out*"
Northern	34,588	$ 9,300	$ 37,500	$ 18,800	$ 700	$ 17,800	$ 6,500
Western	52,749	$ 7,500	$ 32,600	$ 25,300	$ 400	$ 23,100	$ 16,500
Central	56,113	$ 12,600	$ 40,600	$ 22,900	$ 600	$ 21,500	$ 8,200
Eastern	33,693	$ 19,500	$ 50,800	$ 33,000	$ 500	$ 28,900	$ 12,700
Southern	36,288	$ 7,300	$ 30,600	$ 26,100	$ -	$ 18,600	$ 15,000
Deferred Growth	2,381	$ -	$ 495,800	$ 145,400	$ -	$ 300	$ 100
Total	215,812	$ 11,800	$ 39,600	$ 26,500	$ 500	$ 22,100	$ 11,900

*Includes Gap Costs

For expanded data, see Appendix C-1a

Source: Chesterfield County Planning Dept.

III. Findings and Conclusions

A. Key Growth Analysis Findings

1. Under The Comprehensive Plan, the County Will More Than Double In Dwellings and Quadruple In Business Space By Plan Build-Out

Chesterfield County had approximately 102,000 dwellings on December 31, 2001. As the county develops, the number of dwellings will more than double, with about 215,800 households at plan "build-out." If the county achieves its economic development goals, the amount of business space will more than quadruple, from 61.5 million square feet of non-residential development to almost 250 million square feet.

2. Significant New Growth Will Be Guided By Zoning Already In Place

There is a significant amount of vacant and "underutilized" land in Chesterfield County zoned for a more intensive use. This existing zoning offers significant growth potential, especially for residential development. If the existing vacant or underutilized land that is already zoned for residential growth develops to "build-out," there are over 50,000 additional dwelling units that could potentially be built, even with no additional rezoning. This is 44 percent of all the County's future residential development potential. More than 12,500 vacant acres in the County are currently zoned for business uses.

3. Facilities Have Not Always Kept Up With Growth

While some types of public facilities in the county have kept pace with growth, there are others that have not kept up with growth in population and changing demographic needs. Additionally, some facilities are skewed in their geographic distribution. In other words, while the county may have enough total facilities in some categories, they are not necessarily where they are needed. In order to meet existing facility level of service standards, the county would need to spend $1.15 billion on roads and $52 million on all other facilities to fill the existing "gap."

4. Facility Costs at Plan Build-out Are More Than $ 5.7 Billion, Most of Which Is Road Costs

If the county's public facilities level of service standards remain the same, the capital cost to serve new build-out development will be $5,721,000,000. Because more than 55 percent of this is road costs, road construction costs are the primary influencing factor in this analysis.

- $187 million for fire stations
- $99 million for libraries
- $89 million for parks
- $1.2 billion for schools
- $952 million for utilities (public and private costs)
- $3.1 billion for roads (public and private costs)

5. In Analyzing The Cost of Facilities, How the County Serves Its Citizens Is More Important Than Where Those Citizens Are Located

Before the Growth Analysis, there was no information about what factors were most important for determining future facility needs. In other words, what decisions are we making today that will alter the need for facilities in the future? Data from the Growth Phasing Analysis shows that:

- Facilities are not evenly distributed, and future facility locations will in part be based on the location of existing facilities. In some cases, this will lead to the need for a new facility - not where growth is, but where an existing need is to balance the infrastructure network.

- Current level of service standards sometimes forced facility additions where no geographic element required them. For example, a network of facilities may exist that meets the standards for convenience to citizens, but size limitations of facilities mean that additional facilities need to be built. This occurred most frequently with fire stations and elementary schools.

6. Level of Service Standards For Facilities Have A Greater Influence On Total Cost Than Does The Pattern Of Development

An important element of the Growth Analysis is to determine how the distribution of future growth may affect the location and cost of facilities. What was found is that facility service levels and facility "gap" costs will have a greater influence on the total cost of facilities than does the future distribution of growth. When looking at the geographic distribution of facilities costs, the cost of roads (55 percent of total facilities costs) is the overwhelming factor. From a total expense perspective, that cost is significantly greater than the total geographic cost variations for all other types of facilities.

7. With The Exception of Roads, the County's Financial Policies Can Support The Future Cost of Facilities

Analysis of the county’s policies that establish pay as you go funding levels and targeted debt ratios, combined with revenues from growth pay for growth philosophies such as cash proffers indicates the facility needs identified in the public facilities plan, excluding roads, can be addressed through 2022.

8. Following The Comprehensive Plan Can Help Minimize Future Road Costs

The "Gap" cost for roads is more than 1.15 billion dollars, all of which would need to come from public sources. The public build-out cost for roads is projected at 1.1 billion dollars to serve 113,800 more residential units and 187,437,000 square feet of business uses. By following the plan, future public road costs are less than what is needed to cover the gap, and future roads serve more units and business square footage than what currently exists in the county.

B. Growth Analysis Conclusions

The Growth Analysis project has answered many questions. However, there are many additional questions that the data and analysis have raised. In working on the project, staff has found areas where the county's data and analysis could be improved. Staff has also found areas where the county could save money in the future and make better decisions with the data that has been created.

Staff recommends the following be considered in the future:

1. **Review of Level of Service Standards:** A broad and comprehensive level of service standard study would allow efficiencies in providing services to citizens to be found and implemented. There are several ways that the county could potentially reduce costs, including changes in facility sizes and duplications of site acquisition and development among different facilities.
2. **Growth Management Provisions:** Initiate a project that will use Growth Analysis results to:
    - Review the Comprehensive Plan land use recommendations for opportunities to manage the costs and impacts of growth. Evaluate how changes in plan recommendations may influence projected facilities costs. Review the county's deferred growth ("green") area to determine if revisions could result in facilities efficiencies.
    - Determine if there are areas where proactive zoning, downzoning, or changes in development densities would make growth more predictable or efficient.
    - Contribute to a discussion regarding cash proffers.
3. **Use Growth Analysis Project Tools In Zoning Reviews and Comprehensive Plan Amendments:** Staff is currently reviewing ways to use Growth Analysis Project data in the development of new comprehensive plan amendments and in individual zoning case reviews.

IV. Glossary of Terms

The following is a listing of terms used in the Chesterfield County Growth Analysis Report. These terms may have different, though most likely similar, definitions outside of this report.

Archived Case	Zoning cases that have been approved, denied or withdrawn by action of the Board of Supervisors.
Board of Supervisors	The elected governing board of Chesterfield County.
Build-out	For the purpose of the Growth Analysis, build-out is a maximum development scenario for Chesterfield County based on current zoning and the recommendations of the county land use plan.
Capital Improvement Program	A six-year funding program, part of the County budget, to construct needed public facilities.
Cash Proffer	A policy of the Chesterfield County Board of Supervisors which allows applicants requesting rezoning to "proffer" cash payments for the construction of public facilities related to their development proposal.
Commercial Development	For the purpose of the Growth Analysis, commercial development is defined as any office, retail, and general commercial or industrial use.
Comprehensive Plan	A plan that describes community visions for future growth. Comprehensive plans describe general plans and policies for how communities will grow and the tools that are used to guide land use decisions, and give general, long-range recommendations for community growth.
Density	For the purpose of the Growth Analysis, the average number of units on a parcel of land.
Development Potential	For the purpose of the Growth Analysis, development potential is the ultimate growth potential of property based on its zoning and/or land use plan designation.
Development Potential Database (DPD)	For the purpose of the Growth Analysis, the DPD is a database made up of relative land use data for each parcel, and is used to project development potential.
Geographic Information System (GIS)	A computerized mapping and land reference system.
Growth Management	A government program, usually in conjunction with a plan and related ordinances, that controls the rate, character and timing of property development
Growth Phasing Model	For the purpose of the Growth Analysis
Infill	Development that takes place vacant or underutilized land in previously developed areas
Land Use Plan	A component of the comprehensive plan, the land use plan makes recommendations for future planned development.
Planning Commission	Appointed by the Board of Supervisors, the planning Commission makes recommendations to the Supervisors on planning and land development issues.
Pod	For the purpose of the Growth Analysis, study areas were consolidated into six "pods" for analysis.
Public Facility Plan	A component of the county's comprehensive plan, the 1995 Public Facilities plan makes recommendations on the location of number of future public facilities.
Residential Development	For the purpose of the Growth Analysis, residential development is defined as any residential use, including single family, multi-family and mobile home use.

Study Area	For the purpose of the Growth Analysis, Chesterfield County was divided into 18 study areas.
Underutilized Land	For the purpose of the Growth Analysis, underutilized land is that land which has a development potential greater than what is currently on it.
Zoning	Chesterfield County, like many jurisdictions throughout the US, controls property development by various use classifications, called zones. Zoning in Chesterfield is broken down by a number of residential, business and other mixed use classifications.
Zoning Case	When a property owner wants to change the zoning of their property, they apply to the County Planning Department. Planning Dept. staff prepares a zoning case based on this application, and that case, with staff recommendations, is reviewed by both the Planning Commission and Board of Supervisors.

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Appendix A – How Chesterfield Will Grow

A-1: Growth Breakdown By Percentile

- A-1a: Residential Growth Breakdown By Percentile
- A-1b: Commercial Growth Breakdown By Percentile

Table A-1a

Residential Growth Breakdown By Percentile

					Dwelling Units To Be Built To Reach Growth Percentile									
Study Area	12/31 D.U.	Build Out D.U.	Amount Unbuilt	Percent Built As of 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	12,354	16,512	4,158	75%								856	1,651	1,651
2	701	5,152	4,451	14%		329	515	515	515	515	515	515	515	515
3	300	12,515	12,215	2%	952	1,252	1,252	1,252	1,252	1,252	1,252	1,252	1,252	1,252
4	9,885	12,924	3,039	76%								454	1,292	1,292
5	542	13,740	13,198	4%	832	1,374	1,374	1,374	1,374	1,374	1,374	1,374	1,374	1,374
6	10,293	13,773	3,480	75%								725	1,377	1,377
7	9,988	17,114	7,126	58%						280	1,711	1,711	1,711	1,711
8	10,236	12,780	2,544	80%									1,266	1,278
9	2,054	8,495	6,441	24%			495	850	850	850	850	850	850	850
10	2,191	4,226	2,035	52%						345	423	423	423	423
11	15,352	26,219	10,867	59%						379	2,622	2,622	2,622	2,622
12	4,847	6,888	2,041	70%								663	689	689
13	1,951	10,680	8,729	18%		185	1,068	1,068	1,068	1,068	1,068	1,068	1,068	1,068
14	10,066	18,801	8,735	54%						1,215	1,880	1,880	1,880	1,880
15	4,217	8,004	3,787	53%						585	800	800	800	800
16	3,479	14,413	10,934	24%			845	1,441	1,441	1,441	1,441	1,441	1,441	1,441
17	1,721	11,195	9,474	15%		518	1,120	1,120	1,120	1,120	1,120	1,120	1,120	1,120
18	1,683	2,381	698	71%								222	238	238
Total	101,860	215,812	113,952	47%	1,784	3,658	6,668	7,619	7,619	10,423	15,055	17,976	21,569	21,581

					Dwelling Units To Be Built To Reach Growth Percentile									
Pod	12/31 D.U.	Build Out D.U.	Amount Unbuilt	Percent Built As of 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Northern	22,940	34,588	11,648	66%		329	515	515	515	515	515	1,825	3,459	3,459
Western	15,380	52,749	37,369	29%	1,784	2,626	3,120	3,475	3,475	3,820	3,898	4,623	5,275	5,275
Central	35,576	56,113	20,537	63%						660	4,333	4,333	5,599	5,611
Eastern	19,130	33,693	14,563	57%						1,800	2,681	3,344	3,369	3,369
Southern	7,151	36,288	29,137	20%		703	3,032	3,629	3,629	3,629	3,629	3,629	3,629	3,629
Deferred Growth	1,683	2,381	698	71%								222	238	238
Total	101,860	215,812	113,952	47%	1,784	3,658	6,668	7,619	7,619	10,423	15,055	17,976	21,569	21,581

Source: Chesterfield County Planning Department

Table A-1b
Business Growth Breakdown By Percentile

Business Square Footage To Be Built To Reach Growth Percentile

Area	12/31 Business Bldg. Sq. Ft.	Build Out Business Bldg. Sq. Ft.	Amount Unbuilt	Percent Built As of 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	6,913,352	12,396,790	5,483,438	56%						524,722	1,239,679	1,239,679	1,239,679	1,239,679
2	452,813	30,395,795	29,942,982	1%	2,586,767	3,039,580	3,039,580	3,039,580	3,039,580	3,039,580	3,039,580	3,039,580	3,039,580	3,039,580
3	8,799	2,995,919	2,987,120	0%	290,793	299,592	299,592	299,592	299,592	299,592	299,592	299,592	299,592	299,592
4	5,877,437	8,433,676	2,556,239	70%							26,136	843,368	843,368	843,368
5	61,246	5,936,095	5,874,849	1%	532,364	593,610	593,610	593,610	593,610	593,610	593,610	593,610	593,610	593,610
6	2,199,029	11,340,745	9,141,716	19%		69,120	1,134,075	1,134,075	1,134,075	1,134,075	1,134,075	1,134,075	1,134,075	1,134,075
7	3,062,433	18,818,709	15,756,276	16%		701,309	1,881,871	1,881,871	1,881,871	1,881,871	1,881,871	1,881,871	1,881,871	1,881,871
8	5,674,827	11,038,215	5,363,388	51%						948,102	1,103,822	1,103,822	1,103,822	1,103,822
9	209,109	3,383,779	3,174,670	6%	129,269	338,378	338,378	338,378	338,378	338,378	338,378	338,378	338,378	338,378
10	0	0	0	0%										
11	5,016,584	21,865,174	16,848,590	23%			1,542,968	2,186,517	2,186,517	2,186,517	2,186,517	2,186,517	2,186,517	2,186,517
12	16,904,927	30,693,381	13,788,454	55%						1,511,102	3,069,338	3,069,338	3,069,338	3,069,338
13	794,296	11,895,246	11,100,950	7%	395,229	1,189,525	1,189,525	1,189,525	1,189,525	1,189,525	1,189,525	1,189,525	1,189,525	1,189,525
14	4,393,485	16,403,974	12,010,489	27%			527,707	1,640,397	1,640,397	1,640,397	1,640,397	1,640,397	1,640,397	1,640,397
15	9,389,758	62,474,924	53,085,166	15%		3,105,227	6,247,492	6,247,492	6,247,492	6,247,492	6,247,492	6,247,492	6,247,492	6,247,492
16	325,275	627,705	302,430	52%						51,348	62,771	62,771	62,771	62,771
17	124,662	130,512	5,850	96%										5,850
18	63,352	74,857	11,505	85%									4,019	7,486
Total	61,471,384	248,905,496	187,434,112	25%	3,934,420	9,336,339	16,794,797	18,551,036	18,551,036	21,586,310	24,052,781	24,870,013	24,874,032	24,883,348

Dwelling Units To Be Built To Reach Growth Percentile

Pod	12/31 D.U.	Build Out D.U.	Amount Unbuilt	Percent Built As of 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Northern	13,243,602	51,226,261	37,982,659	26%	2,586,767	3,039,580	3,039,580	3,039,580	3,039,580	3,564,302	4,305,395	5,122,626	5,122,626	5,122,626
Western	2,478,183	23,656,538	21,178,355	10%	952,425	1,300,699	2,365,654	2,365,654	2,365,654	2,365,654	2,365,654	2,365,654	2,365,654	2,365,654
Central	13,753,844	51,722,098	37,968,254	27%		701,309	3,424,839	4,068,388	4,068,388	5,016,490	5,172,210	5,172,210	5,172,210	5,172,210
Eastern	30,688,170	109,572,279	78,884,109	28%		3,105,227	6,775,200	7,887,890	7,887,890	9,398,991	10,957,228	10,957,228	10,957,228	10,957,228
Southern	1,244,233	12,653,463	11,409,230	10%	395,229	1,189,525	1,189,525	1,189,525	1,189,525	1,240,873	1,252,295	1,252,295	1,252,295	1,258,145
Deferred Grov	63,352	74,857	11,505	85%									4,019	7,486
Total	61,471,384	248,905,496	187,434,112	25%	3,934,420	9,336,339	16,794,797	18,551,036	18,551,036	21,586,310	24,052,781	24,870,013	24,874,032	24,883,348

Source: Chesterfield County Planning Department

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Appendix B – Facilities Needed To Serve Growth

B-1: Need By Facilities Type – For Study Areas and Pods

- B-1a: Fire Stations
- B-1b: Libraries
- B1-c: Community Parks
- B1-d: Regional Parks
- B1-e: High Schools
- B-1f: Middle Schools
- B1g: Elementary Schools

Table B-1a

Need By Facilities Type

Fire Stations

Projected Facilities At Each Growth Percentile

Study Area	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
1	1	-								-	1	-	1	1
2	-	-		-	-	-	1	-	-	-	-	-	1	1
3	-	-	-	1	-	-	1	-	1	-	1	-	4	4
4	1	1								-	1	-	1	2
5	-	-	-	1	-	1	-	1	-	1	-	-	4	4
6	2	-								-	1	-	1	1
7	1	1						-	1	-	1	-	2	3
8	2	-									-	1	1	1
9	-	-			-	-	1	-	-	1	-	-	2	2
10	-	1						-	-	-	-	1	1	2
11	2	-						-	1	1	1	1	4	4
12	2	-								-	-	1	1	1
13	-	-		-	1	-	-	-	1	-	-	1	3	3
14	2	1						-	1	1	-	1	3	4
15	1	1						-	-	1	-	-	1	2
16	2	-			-	1	-	1	-	1	-	1	4	4
17	1	-		-	1	-	-	1	-	-	1	-	3	3
18	-	-								-	-	-	-	-
Total	17	5	-	2	2	2	3	3	5	6	7	7	37	42

Pod	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
Northern	-	1	-	-	-	-	1	-	-	-	2	-	3	4
Western	-	1	-	2	-	1	2	1	1	2	2	1	12	13
Central	-	1		-	-	-	-	-	2	1	2	2	7	8
Eastern	-	2		-	-	-	-	-	1	2	-	2	5	7
Southern	-	-	-	-	2	1	-	2	1	1	1	2	10	10
Deferred Growth	-	-									-	-	-	-
Total	-	5	-	2	2	2	3	3	5	6	7	7	37	42

Source: Chesterfield County Planning Dept.

Table B-1b

Need By Facilities Type

Libraries

Projected Facilities At Each Growth Percentile

Study Area	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
1	1	-								Add	-	New	1 New, 1 Add	1 Add, 1 New
2	-	-		-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	New	-	-	-	-	-	-	-	1 New	1 New
4	1	New								-	-	Add	1 Add	2 Add
5	-	-	-	-	-	-	-	-	-	New	-	-	1 New	1 New
6	1	-								-	-	Add	1 Add	1 Add
7	1	-						-	-	-	-	-	-	-
8	-	-									-	-	-	-
9	-	-			-	-	-	New	-	-	-	-	1 New	1 New
10	-	-						-	-	-	-	-	-	-
11	2	-						Add	Add	-	-	-	2 Add	2 Add
12	-	-								-	-	-	-	-
13	-	-		-	-	-	-	-	-	-	New	-	1 New	1 New
14	1	-						-	-	-	New	-	1 New	1 New
15	1	-						-	Add	-	-	-	1 Add	1 Add
16	1	-			-	-	-	-	Add	-	-	-	1 Add	1 Add
17	-	-		-	-	-	New	-	-	-	-	-	1 New	1 New
18	-	-								-	-	-	-	-
Total	9	1 New	-	-	1 New	-	1 New	1 New, 1 Add	3 Add	1 New, 1 Add	2 New	1 New, 2 Add	7 New, 7 Add	7 New, 8 Add

Pod	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
Northern	2	1 Add	-	-	-	-	-	-	-	1 Add	-	1 New, 1 Add	1 New, 2 Add	1 New, 3 Add
Western	1	-	-	-	1 New	-	-	1 Add	-	1 New	-	1 Add	2 New, 2 Add	2 New, 2 Add
Central	3	-		-	-	-	-	1 New	1 Add	-	-	-	1 New, 1 Add	1 New, 1 Add
Eastern	2	-		-	-	-	-	-	1 Add	-	1 New	-	1 New, 1 Add	1 New, 1 Add
Southern	1	-	-	-	-	-	1 New	-	1 Add	-	1 New	-	2 New, 1 Add	2 New, 1 Add
Deferred Growth	-	-									-	-	-	-
Total	9	1 Add	-	-	1 New	-	1 New	1 New, 1 Add	3 Add	1 New, 1 Add	2 New	1 New, 2 Add	7 New, 7 Add	7 New, 8 Add

Source: Chesterfield County Planning Dept.

Table B-1c

Need By Facilities Type

Community Parks

Projected Facilities At Each Growth Percentile

Study Area	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
1	2	-								-	-	-	-	-
2	-	-		-	-	-	-	-	-	-	-	1	1	1
3	-	-	-	-	-	-	-	-	1	-	-	-	1	1
4	-	1								-	1	-	1	2
5	-	-	-	-	1	-	-	-	-	-	-	-	1	1
6	1	1								-	-	1	1	2
7	1	-						-	-	-	-	-	-	-
8	1	1									-	-	-	1
9	-	-			-	-	-	1	-	-	-	-	1	1
10	-	-						-	-	-	1	-	1	1
11	2	-						-	-	1	-	-	1	1
12	-	-								-	1	-	1	1
13	-	-		-	-	-	-	1	-	-	-	-	1	1
14	2	-						-	-	-	-	-	-	-
15	-	-						-	-	1	-	-	1	1
16	2	-			-	-	-	-	-	-	-	-	-	-
17	-	-		-	-	1	-	-	-	-	-	-	1	1
18	-	-								-	-	-	-	-
Total	11	3	-	-	1	1	-	2	1	2	3	2	12	15

Pod	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
Northern	2	1	-	-	-	-	-	-	-	-	1	1	2	3
Western	1	1	-	-	1	-	-	1	1	-	1	1	5	6
Central	4	1		-	-	-	-	-	-	1	-	-	1	2
Eastern	2	-		-	-	-	-	-	-	1	1	-	2	2
Southern	2	-	-	-	-	1	-	1	-	-	-	-	2	2
Deferred Growth	-	-									-	-	-	-
Total	11	3	-	-	1	1	-	2	1	2	3	2	12	15

Source: Chesterfield County Planning Dept.

Table B-1d

Need By Facilities Type

Regional Parks

Projected Facilities At Each Growth Percentile

Study Area	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
1	-	-								1	-	-	1	1
2	-	-		-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-								-	-	-	-	-
5	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-								-	1	-	1	1
7	1	-						-	-	-	-	-	-	-
8	-	-									-	1	1	1
9	-	-			-	-	-	-	-	-	-	-	-	-
10	-	-						-	-	-	-	-	-	-
11	1	-						-	-	-	-	-	-	-
12	-	-								-	-	-	-	-
13	-	-		-	-	-	-	-	-	-	-	-	-	-
14	-	-						-	1	-	-	-	1	1
15	1	-						-	-	-	-	-	-	-
16	-	-			-	-	-	1	-	-	-	-	1	1
17	-	-		-	-	-	-	-	-	-	-	-	-	-
18	1	-								-	-	-	-	-
Total	5	-	-	-	-	-	-	1	1	1	1	1	5	5

Pod	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
Northern	-	-	-	-	-	-	-	-	-	1	-	-	1	1
Western	1	-	-	-	-	-	-	-	-	-	1	-	1	1
Central	2	-		-	-	-	-	-	-	-	-	1	1	1
Eastern	1	-		-	-	-	-	-	1	-	-	-	1	1
Southern	-	-	-	-	-	-	-	1	-	-	-	-	1	1
Deferred Growth	1	-									-	-	-	-
Total	5	-	-	-	-	-	-	1	1	1	1	1	5	5

Source: Chesterfield County Planning Dept.

Table B-1e

Need By Facilities Type

High Schools

Projected Facilities At Each Growth Percentile

Study Area	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
1	1	-								-	-	-	-	-
2	1	-		-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	1	-	-	-	1	1
4	1	-								-	-	-	-	-
5	-	-	-	-	1	-	-	-	-	-	-	-	1	1
6	1	-								-	-	-	-	-
7	-	-						1	-	-	-	-	1	1
8	-	-									1	-	1	1
9	-	-			-	-	-	-	-	-	-	1	1	1
10	1	-						-	-	-	-	-	-	-
11	2	-						-	-	-	-	-	-	-
12	-	-								-	-	-	-	-
13	1	-		-	-	-	-	-	-	-	-	-	-	-
14	1	-						-	-	-	1	-	1	1
15	-	-						-	-	-	-	1	1	1
16	-	-			-	-	1	-	-	-	-	-	1	1
17	-	-		-	-	-	-	-	-	1	-	-	1	1
18	-	-								-	-	-	-	-
Total	9	-	-	-	1	-	1	1	1	1	2	2	9	9

Pod	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
Northern	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Western	2	-	-	-	1	-	-	-	1	-	-	1	3	3
Central	2	-		-	-	-	-	1	-	-	1	-	2	2
Eastern	1	-		-	-	-	-	-	-	-	1	1	2	2
Southern	1	-	-	-	-	-	1	-	-	1	-	-	2	2
Deferred Growth	-	-									-	-	-	-
Total	9	-	-	-	1	-	1	1	1	1	2	2	9	9

Source: Chesterfield County Planning Dept.

Table B-1f

Need By Facilities Type

Middle Schools

Projected Facilities At Each Growth Percentile

Study Area	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
1	1	-								-	-	1	1	1
2	-	-		-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	1	-	-	-	-	1	1
4	1	-								-	-	-	-	-
5	-	-	-	-	1	-	-	-	-	-	-	-	1	1
6	1	-								-	-	-	-	-
7	-	-						-	1	-	-	1	2	2
8	2	-									-	-	-	-
9	-	-			-	-	-	-	-	1	-	-	1	1
10	1	-						-	-	-	-	-	-	-
11	2	-						-	-	-	1	-	1	1
12	-	-								1	-	-	1	1
13	-	-		-	-	1	-	-	-	-	-	-	1	1
14	2	-						-	-	-	-	-	-	-
15	-	-						-	-	-	1	-	1	1
16	1	-			-	-	-	-	-	-	-	-	-	-
17	-	-		-	-	-	-	-	1	-	-	-	1	1
18	-	-								-	-	-	-	-
Total	11	-	-	-	1	1	-	1	2	2	2	2	11	11

Pod	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
Northern	2	-	-	-	-	-	-	-	-	-	-	1	1	1
Western	2	-	-	-	1	-	-	1	-	1	-	-	3	3
Central	4	-		-	-	-	-	-	1	-	1	1	3	3
Eastern	2	-		-	-	-	-	-	-	1	1	-	2	2
Southern	1	-	-	-	-	1	-	-	1	-	-	-	2	2
Deferred Growth	-	-									-	-	-	-
Total	11	-	-	-	1	1	-	1	2	2	2	2	11	11

Source: Chesterfield County Planning Dept.

Table B-1g

Need By Facilities Type

Elementary Schools

Projected Facilities At Each Growth Percentile

Study Area	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
1	5	-								-	-	1	1	1
2	-	-		-	-	-	-	-	-	-	1	-	1	1
3	-	-	-	1	-	-	1	-	1	-	-	1	4	4
4	4	-								-	-	-	-	-
5	-	-	1	-	-	1	-	1	-	-	1	-	4	4
6	4	-								-	-	1	1	1
7	3	-						-	-	1	1	-	2	2
8	2	1									-	1	1	2
9	1	-			-	-	-	-	-	1	-	-	1	1
10	-	-						1	-	-	-	-	1	1
11	7	-						-	-	-	1	-	1	1
12	2	-								-	-	1	1	1
13	-	-		-	1	-	1	-	-	-	1	-	3	3
14	3	-						1	1	-	1	-	3	3
15	2	-						-	-	-	-	1	1	1
16	2	-			-	-	-	1	-	1	-	1	3	3
17	-	-		1	-	1	-	-	1	-	-	-	3	3
18	1	-								-	-	-	-	-
Total	36	1	1	2	1	2	2	4	3	3	6	7	31	32

Pod	Existing at 12/31/01	Gap At 12/31/01	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Additional Need By Build-Out	Total Need
Northern	9	-	-	-	-	-	-	-	-	-	1	1	2	2
Western	5	-	1	1	-	1	1	2	1	1	1	2	11	11
Central	12	1		-	-	-	-	-	-	1	2	1	4	5
Eastern	7	-		-	-	-	-	1	1	-	1	2	5	5
Southern	2	-	-	1	1	1	1	1	1	1	1	1	9	9
Deferred Growth	1	-									-	-	-	-
Total	36	1	1	2	1	2	2	4	3	3	6	7	31	32

Source: Chesterfield County Planning Dept.

Appendix C – How Much Facilities Could Cost

C-1: Facilities Cost Summary By Pod

- C-1a: Pod Cost Summary
- C-1a: Total Cost By Pod (12/01 Base + Build-Out)
- C-1b: Build-Out Cost By Pod
- C-1c: 12/01 Base Cost By Pod

C-2: Facilities Cost Summary By Study Area

- C-2a: Total Cost By Study Area – Public and Private
- C-2b: Total Cost By Study Area – Public Sector
- C-2c: Total Cost By Study Area – Private Sector
- C-2d: Build-Out Cost By Study Area – Public and Private
- C-2e: Build-Out Cost By Study Area – Public
- C-2f: Build-Out Cost By Study Area – Private
- C-2g: Total 12/31/01 Cost By Study Area – Public and Private
- C-2h: 12/31/01 Cost By Study Area – Public
- C-2i: 12/31/01 Cost By Study Area – Private

C-3: Facilities Cost By Study Area

- C-3a: Fire Stations
- C-3b: Libraries
- C-3c: Community Parks
- C-3d: Regional Parks
- C-3e: High Schools
- C-3f: Middle Schools
- C-3g: Elementary Schools
- C-3h: Utilities
- C-3i: Roads

C-4: Percentile Costs By Pods

- C-4a: Northern
- C-4b: Western
- C-4c: Central
- C-4d: Eastern
- C-4e: Southern
- C-4f: Deferred Growth

C-5: Percentile Costs By Study Area

1. C-5a through C-5m: Study Areas 1 through 18

Table C-1a

POD Cost Summary

(12/01 Plus Build-Out)

Total Cost (12/31/01 Plus Build Out)

Pod	Total Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities*	Roads	Total Costs	Cost Per All Units	Per Acre Cost
Northern	34,588	$ 17,700,000	$ 24,441,600	$ 8,773,400	$ 8,073,300	$ 0	$ 27,000,000	$ 27,500,000	$110,000,000	$ 426,985,500	$ 650,473,800	$ 18,800	$ 20,900
Western	52,749	$ 57,800,000	$ 33,559,500	$ 18,939,300	$ 8,073,300	$173,500,000	$ 62,000,000	$157,000,000	$357,300,000	$ 467,102,200	$ 1,335,274,300	$ 25,300	$ 27,300
Central	56,113	$ 36,000,000	$ 5,395,100	$ 5,918,500	$ 8,073,300	$113,500,000	$ 79,000,000	$ 69,500,000	$144,100,000	$ 821,887,400	$ 1,283,374,300	$ 22,900	$ 31,000
Eastern	33,693	$ 31,300,000	$ 12,637,800	$ 6,963,000	$ 8,818,600	$113,500,000	$ 52,000,000	$ 70,000,000	$134,000,000	$ 683,702,100	$ 1,112,921,500	$ 33,000	$ 24,100
Southern	36,288	$ 45,000,000	$ 23,662,600	$ 6,963,000	$ 8,073,300	$120,000,000	$ 54,000,000	$126,000,000	$159,400,000	$ 402,256,400	$ 945,355,300	$ 26,100	$ 18,000
Deferred Growth	2,381	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$ 345,899,500	$ 346,099,500	$ 145,400	$ 5,800
Total	215,812	$187,800,000	$ 99,696,600	$ 47,557,200	$ 41,111,800	$520,500,000	$274,000,000	$450,000,000	$952,100,000	$ 3,147,833,100	$ 5,720,598,700	$ 26,500	$ 20,400

Build Out Cost

Pod	Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities*	Roads	Total Costs	Per New Unit Cost at Build Out	Per Acre Cost
Northern	11,648	$ 13,500,000	$ 14,189,200	$ 6,963,000	$ 8,073,300	$ 0	$ 27,000,000	$ 27,500,000	$110,000,000	$ 229,142,400	$ 436,367,900	$ 37,500	$ 14,000
Western	37,369	$ 54,000,000	$ 33,559,500	$ 16,223,800	$ 8,073,300	$173,500,000	$ 62,000,000	$157,000,000	$357,300,000	$ 358,099,500	$ 1,219,756,100	$ 32,600	$ 24,900
Central	20,537	$ 31,500,000	$ 5,395,100	$ 3,481,500	$ 8,073,300	$113,500,000	$ 79,000,000	$ 56,000,000	$144,100,000	$ 393,761,500	$ 834,811,400	$ 40,600	$ 20,200
Eastern	14,563	$ 22,500,000	$ 12,637,800	$ 6,963,000	$ 8,818,600	$113,500,000	$ 52,000,000	$ 70,000,000	$134,000,000	$ 319,373,200	$ 739,792,600	$ 50,800	$ 16,000
Southern	29,137	$ 45,000,000	$ 23,662,600	$ 6,963,000	$ 8,073,300	$120,000,000	$ 54,000,000	$126,000,000	$159,400,000	$ 349,729,000	$ 892,827,900	$ 30,600	$ 17,000
Deferred Growth	698	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$ 345,899,500	$ 346,099,500	$ 495,800	$ 5,800
Total	113,952	$166,500,000	$ 89,444,200	$ 40,594,300	$ 41,111,800	$520,500,000	$274,000,000	$436,500,000	$952,100,000	$ 1,996,005,100	$ 4,516,755,400	$ 39,600	$ 16,100

"Gap" Costs As of12/31/01

Pod	Existing Residential Units (12/31/01)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities*	Roads	Total Costs	Cost Per Existing Unit	Per Acre Cost
Northern	22,940	$ 4,200,000	$ 10,252,400	$ 1,810,400	$ 0	$ 0	$ 0	$ 0	$ 0	$ 197,843,100	$ 214,105,900	$ 9,300	$ 6,900
Western	15,380	$ 3,800,000	$ 0	$ 2,715,500	$ 0	$ 0	$ 0	$ 0	$ 0	$ 109,002,700	$ 115,518,200	$ 7,500	$ 2,400
Central	35,576	$ 4,500,000	$ 0	$ 2,437,000	$ 0	$ 0	$ 0	$ 13,500,000	$ 0	$ 428,125,900	$ 448,562,900	$ 12,600	$ 10,900
Eastern	19,130	$ 8,800,000	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 364,328,900	$ 373,128,900	$ 19,500	$ 8,100
Southern	7,151	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 52,527,400	$ 52,527,400	$ 7,300	$ 1,000
Deferred Growth	1,683	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ -	$ -
Total	101,860	$ 21,300,000	$ 10,252,400	$ 6,962,900	$ 0	$ 0	$ 0	$ 13,500,000	$ 0	$ 1,151,828,000	$ 1,203,843,300	$ 11,800	$ 4,300

Note: Identified costs are those needed to meet existing level of service requirements.

*Utilities total is adjusted.

Table C-1b

Total Cost By Pod

(12/01 Gap Plus Build-Out)

Total Cost

Area	Total Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities*	Roads	Total Costs	Cost Per All Units	Per Acre Cost
Northern	34,588	$ 17,700,000	$ 24,441,600	$ 8,773,400	$ 8,073,300	$ 0	$ 27,000,000	$ 27,500,000	$110,000,000	$ 426,985,500	$ 650,473,800	$ 18,800	$ 20,900
Western	52,749	$ 57,800,000	$ 33,559,500	$ 18,939,300	$ 8,073,300	$173,500,000	$ 62,000,000	$157,000,000	$357,300,000	$ 467,102,200	$ 1,335,274,300	$ 25,300	$ 27,300
Central	56,113	$ 36,000,000	$ 5,395,100	$ 5,918,500	$ 8,073,300	$113,500,000	$ 79,000,000	$ 69,500,000	$144,100,000	$ 821,887,400	$ 1,283,374,300	$ 22,900	$ 31,000
Eastern	33,693	$ 31,300,000	$ 12,637,800	$ 6,963,000	$ 8,818,600	$113,500,000	$ 52,000,000	$ 70,000,000	$134,000,000	$ 683,702,100	$ 1,112,921,500	$ 33,000	$ 24,100
Southern	36,288	$ 45,000,000	$ 23,662,600	$ 6,963,000	$ 8,073,300	$120,000,000	$ 54,000,000	$126,000,000	$159,400,000	$ 402,256,400	$ 945,355,300	$ 26,100	$ 18,000
Deferred Growth	2,381	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$ 345,899,500	$ 346,099,500	$ 145,400	$ 5,800
Total	215,812	$187,800,000	$ 99,696,600	$ 47,557,200	$ 41,111,800	$520,500,000	$274,000,000	$450,000,000	$952,100,000	$ 3,147,833,100	$ 5,720,598,700	$ 26,500	$ 20,400

Public Sector Cost

Area	Total Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities*	Roads	Total Costs	Cost Per All Units	Per Acre Cost
Northern	34,588	$ 17,700,000	$ 24,441,600	$ 8,773,400	$ 8,073,300	$ -	$ 27,000,000	$ 27,500,000	$ 26,300,000	$384,703,100	$ 524,491,400	$ 15,200	$ 16,900
Western	52,749	$ 57,800,000	$ 33,559,500	$ 18,939,300	$ 8,073,300	$173,500,000	$ 62,000,000	$157,000,000	$ 55,800,000	$252,665,200	$ 819,337,300	$ 15,500	$ 16,800
Central	56,113	$ 36,000,000	$ 5,395,100	$ 5,918,500	$ 8,073,300	$113,500,000	$ 79,000,000	$ 69,500,000	$ 13,500,000	$780,161,700	$ 1,111,048,600	$ 19,800	$ 26,900
Eastern	33,693	$ 31,300,000	$ 12,637,800	$ 6,963,000	$ 8,818,600	$113,500,000	$ 52,000,000	$ 70,000,000	$ 33,800,000	$614,823,600	$ 943,843,000	$ 28,000	$ 20,400
Southern	36,288	$ 45,000,000	$ 23,662,600	$ 6,963,000	$ 8,073,300	$120,000,000	$ 54,000,000	$126,000,000	$ 27,900,000	$189,235,700	$ 600,834,600	$ 16,600	$ 11,500
Deferred Growth	2,381	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$21,372,100	$ 21,372,100	$ 9,000	$ 400
Total	215,812	$187,800,000	$ 99,696,600	$ 47,557,200	$ 41,111,800	$520,500,000	$274,000,000	$450,000,000	$219,200,000	$ 2,242,961,400	$ 4,082,827,000	$ 18,900	$ 14,600

Private Sector Cost

Area	Total Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities*	Roads	Total Costs	Cost Per All Units	Per Acre Cost
Northern	34,588	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 83,700,000	$ 42,282,400	$ 125,982,400	$ 3,642	$ 4,100
Western	52,749	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$301,500,000	$ 214,437,000	$ 515,937,000	$ 9,781	$ 10,600
Central	56,113	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$130,600,000	$ 41,725,700	$ 172,325,700	$ 3,071	$ 4,200
Eastern	33,693	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$100,200,000	$ 68,878,500	$ 169,078,500	$ 5,018	$ 3,700
Southern	36,288	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$131,500,000	$ 213,020,700	$ 344,520,700	$ 9,494	$ 6,600
Deferred Growth	2,381	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$ 324,527,400	$ 324,727,400	$ 136,383	$ 5,400
Total	215,812	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$732,900,000	$ 904,871,700	$ 1,652,571,700	$ 7,657	$ 5,900

Note: Identified costs are those needed to meet existing level of service requirements.

*Utilities total is adjusted.

Table C-1c
Build Out Cost By Pod

Total Cost

Area	Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Per New Unit Cost at Build Out	Per Acre Cost
Northern	11,648	$ 13,500,000	$ 14,189,200	$ 6,963,000	$ 8,073,300	$ 0	$ 27,000,000	$ 27,500,000	$ 110,000,000	$ 229,142,400	$ 436,367,900	$ 37,500	$ 14,000
Western	37,369	$ 54,000,000	$ 33,559,500	$ 16,223,800	$ 8,073,300	$173,500,000	$ 62,000,000	$157,000,000	$ 357,300,000	$ 358,099,500	$ 1,219,756,100	$ 32,600	$ 24,900
Central	20,537	$ 31,500,000	$ 5,395,100	$ 3,481,500	$ 8,073,300	$113,500,000	$ 79,000,000	$ 56,000,000	$ 144,100,000	$ 393,761,500	$ 834,811,400	$ 40,600	$ 20,200
Eastern	14,563	$ 22,500,000	$ 12,637,800	$ 6,963,000	$ 8,818,600	$113,500,000	$ 52,000,000	$ 70,000,000	$ 134,000,000	$ 319,373,200	$ 739,792,600	$ 50,800	$ 16,000
Southern	29,137	$ 45,000,000	$ 23,662,600	$ 6,963,000	$ 8,073,300	$120,000,000	$ 54,000,000	$126,000,000	$ 159,400,000	$ 349,729,000	$ 892,827,900	$ 30,600	$ 17,000
Deferred Growth	698	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$ 345,899,500	$ 346,099,500	$ 495,800	$ 5,800
Total	113,952	$166,500,000	$ 89,444,200	$ 40,594,300	$ 41,111,800	$520,500,000	$274,000,000	$436,500,000	$ 952,100,000	$ 1,996,005,100	$ 4,516,755,400	$ 39,600	$ 16,100

Public Sector Cost

Area	Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Per New Unit Cost at Build Out	Per Acre Cost
Northern	11,648	$ 13,500,000	$ 14,189,200	$ 6,963,000	$ 8,073,300	$ -	$ 27,000,000	$ 27,500,000	$ 26,300,000	$ 186,860,000	$ 310,385,500	$ 26,600	$ 10,000
Western	37,369	$ 54,000,000	$ 33,559,500	$ 16,223,800	$ 8,073,300	$173,500,000	$ 62,000,000	$157,000,000	$ 55,800,000	$ 143,662,500	$ 703,819,100	$ 18,800	$ 14,400
Central	20,537	$ 31,500,000	$ 5,395,100	$ 3,481,500	$ 8,073,300	$113,500,000	$ 79,000,000	$ 56,000,000	$ 13,500,000	$ 352,035,800	$ 662,485,700	$ 32,300	$ 16,000
Eastern	14,563	$ 22,500,000	$ 12,637,800	$ 6,963,000	$ 8,818,600	$113,500,000	$ 52,000,000	$ 70,000,000	$ 33,800,000	$ 250,494,700	$ 570,714,100	$ 39,200	$ 12,400
Southern	29,137	$ 45,000,000	$ 23,662,600	$ 6,963,000	$ 8,073,300	$120,000,000	$ 54,000,000	$126,000,000	$ 27,900,000	$ 136,708,300	$ 548,307,200	$ 18,800	$ 10,500
Deferred Growth	698	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,372,100	$ 21,372,100	$ 30,600	$ 400
Total	113,952	$166,500,000	$ 89,444,200	$ 40,594,300	$ 41,111,800	$520,500,000	$274,000,000	$436,500,000	$ 219,200,000	$ 1,091,133,400	$ 2,878,983,700	$ 25,300	$ 10,300
									$ 157,300,000				

Private Sector Cost

Area	Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Per New Unit Cost at Build Out	Per Acre Cost
Northern	11,648	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 83,700,000	$ 42,282,400	$ 125,982,400	$ 10,800	$ 4,100
Western	37,369	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 301,500,000	$ 214,437,000	$ 515,937,000	$ 13,800	$ 10,600
Central	20,537	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 130,600,000	$ 41,725,700	$ 172,325,700	$ 8,400	$ 4,200
Eastern	14,563	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 100,200,000	$ 68,878,500	$ 169,078,500	$ 11,600	$ 3,700
Southern	29,137	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 131,500,000	$ 213,020,700	$ 344,520,700	$ 11,800	$ 6,600
Deferred Growth	698	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$ 324,527,400	$ 324,727,400	$ 465,200	$ 5,400
Total	113,952	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 732,900,000	$ 904,871,700	$ 1,652,571,700	$ 14,500	$ 5,900
									747,700,000				

Note: Identified costs are those needed to meet existing level of service requirements.

* Per capita cost is calculated as cost per residential dwelling unit, the driver for level of service requirements.

** Costs calculated per acre of commercial development.

Table C-1d
Base Gap Cost By Pod
(As of December 31, 2001)

Total Cost

Area	Existing Residential Units (12/31)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Cost Per Existing Unit	Per Acre Cost
Northern	22,940	$ 4,200,000	$10,252,400	$1,810,400	$ 0	$ 0	$ 0	$ 0	$ 0	$ 197,843,100	$ 214,105,900	$ 9,300	$ 6,900
Western	15,380	$ 3,800,000	$ 0	$2,715,500	$ 0	$ 0	$ 0	$ 0	$ 0	$ 109,002,700	$ 115,518,200	$ 7,500	$ 2,400
Central	35,576	$ 4,500,000	$ 0	$2,437,000	$ 0	$ 0	$ 0	$13,500,000	$ 0	$ 428,125,900	$ 448,562,900	$ 12,600	$ 10,900
Eastern	19,130	$ 8,800,000	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 364,328,900	$ 373,128,900	$ 19,500	$ 8,100
Southern	7,151	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 52,527,400	$ 52,527,400	$ 7,300	$ 1,000
Deferred Growth	1,683	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ -	$ -
Total	101,860	$21,300,000	$10,252,400	$6,962,900	$ 0	$ 0	$ 0	$13,500,000	$ 0	$1,151,828,000	$1,203,843,300	$ 11,800	$ 4,300

Public Sector Cost

Area	Existing Residential Units (12/31/01)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Cost Per Existing Unit	Per Acre Cost
Northern	22,940	$4,200,000	$10,252,400	$1,810,400	$ -	$ -	$ -	$0	$ -	$197,843,100	$ 214,105,900	$ 9,300	$ 6,900
Western	15,380	$3,800,000	$ -	$2,715,500	$ -	$ -	$ -	$0	$ -	$109,002,700	$ 115,518,200	$ 7,500	$ 2,400
Central	35,576	$4,500,000	$ -	$2,437,000	$ -	$ -	$ -	$13,500,000	$ -	$428,125,900	$ 448,562,900	$ 12,600	$ 10,900
Eastern	19,130	$8,800,000	$ -	$ -	$ -	$ -	$ -	$0	$ -	$364,328,900	$ 373,128,900	$ 19,500	$ 8,100
Southern	7,151	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$52,527,400	$ 52,527,400	$ 7,300	$ 1,000
Deferred Growth	1,683	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$0	$ -	$ -	$ -
Total	101,860	$21,300,000	$10,252,400	$6,962,900	$ -	$ -	$ -	$13,500,000	$ -	$1,151,828,000	$1,203,843,300	$ 11,800	$ 4,300

Private Sector Cost

Area	Existing Residential Units (12/31)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Cost Per Existing Unit	Per Acre Cost
Northern	22,940	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
Western	15,380	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
Central	35,576	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
Eastern	19,130	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
Southern	7,151	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
Deferred Growth	1,683	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
Total	101,860	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	

Note: Identified costs are those needed to meet existing level of service requirements.

* Per capita cost is calculated as cost per residential dwelling unit, the driver for level of service requirements.

** Costs calculated per acre of commercial development.

Table C-2a,b,c
Total Cost By Study Area
12/01 Gap Total Plus Build Out Total

Total Cost

Area	Total Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total 12/01 + LUP Build Out Costs	Total Per Unit Cost (12/01 + Build Out)	Per Acre Cost
1	16,512	$ 4,500,000	$ 12,220,800	$ 0	$ 8,073,300	$ 0	$ 27,000,000	$13,500,000	$ 30,000,000	$173,673,800	$ 268,967,900	$ 16,300	$ 17,400
2	5,152	$ 4,500,000	$ 0	$ 3,481,500	$ 0	$ 0	$ 0	$14,000,000	$ 56,200,000	$144,253,100	$ 222,434,600	$ 43,200	$ 30,400
3	12,515	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$56,000,000	$ 116,200,000	$101,156,800	$ 392,090,700	$ 31,300	$ 43,700
4	12,924	$ 8,700,000	$ 12,220,800	$ 5,291,900	$ 0	$ 0	$ 0	$0	$ 23,800,000	$109,058,600	$ 159,071,300	$ 12,300	$ 19,100
5	13,740	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ 0	$ 53,500,000	$ 8,000,000	$56,000,000	$ 131,800,000	$112,592,600	$ 393,626,500	$ 28,600	$ 32,800
6	13,773	$ 4,500,000	$ 2,802,300	$ 5,013,300	$ 8,073,300	$ 0	$ 0	$14,000,000	$ 31,200,000	$90,527,900	$ 156,116,800	$ 11,300	$ 16,000
7	17,114	$ 13,500,000	$ 0	$ 0	$ 0	$ 53,500,000	$ 52,000,000	$27,000,000	$ 46,800,000	$206,199,400	$ 398,999,400	$ 23,300	$ 29,600
8	12,780	$ 4,500,000	$ 0	$ 2,437,000	$ 8,073,300	$ 60,000,000	$ 0	$27,000,000	$ 20,500,000	$240,154,600	$ 362,664,900	$ 28,400	$ 48,400
9	8,495	$ 9,000,000	$ 10,252,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$15,500,000	$ 51,500,000	$87,138,300	$ 263,872,200	$ 31,100	$ 37,200
10	4,226	$ 8,300,000	$ 0	$ 3,481,500	$ 0	$ 0	$ 0	$15,500,000	$ 26,600,000	$75,686,600	$ 129,568,100	$ 30,700	$ 11,700
11	26,219	$ 18,000,000	$ 5,395,100	$ 3,481,500	$ 0	$ 0	$ 27,000,000	$15,500,000	$ 76,800,000	$375,533,400	$ 521,710,000	$ 19,900	$ 25,600
12	6,888	$ 4,500,000	$ 0	$ 3,481,500	$ 0	$ 0	$ 25,000,000	$14,000,000	$ 14,500,000	$173,057,300	$ 234,538,800	$ 34,100	$ 27,700
13	10,680	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ 0	$ 0	$ 27,000,000	$42,000,000	$ 42,500,000	$180,125,900	$ 318,859,800	$ 29,900	$ 17,200
14	18,801	$ 18,000,000	$ 10,252,400	$ 0	$ 8,818,600	$ 53,500,000	$ 0	$42,000,000	$ 59,100,000	$297,542,100	$ 489,213,100	$ 26,000	$ 36,600
15	8,004	$ 8,800,000	$ 2,385,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$14,000,000	$ 60,400,000	$213,102,700	$ 389,169,600	$ 48,600	$ 16,000
16	14,413	$ 18,000,000	$ 3,157,800	$ 0	$ 8,073,300	$ 60,000,000	$ 0	$42,000,000	$ 68,900,000	$90,115,000	$ 290,246,100	$ 20,100	$ 30,300
17	11,195	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$42,000,000	$ 48,000,000	$132,015,500	$ 336,249,400	$ 30,000	$ 13,800
18	2,381	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$0	$ 200,000	$345,899,500	$ 346,099,500	$ 145,400	$ 5,800
Total	215,812	$ 187,800,000	$ 99,696,600	$ 47,557,200	$ 41,111,800	$ 520,500,000	$ 274,000,000	$ 450,000,000	$ 952,100,000	$ 3,147,833,100	$ 5,720,598,700	$ 26,500	$ 20,400

Note: Utilities and Transportation totals are adjusted.

Table C-2a,b,c
Total Cost By Study Area
12/01 Gap Total Plus Build Out Total

Public Sector Cost

Area	Total Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total 12/01 + LUP Build Out Costs	Total Per Unit Cost (12/01 + Build Out)	Per Acre Cost
1	16,512	$ 4,500,000	$ 12,220,800	$ -	$ 8,073,300	$ -	$ 27,000,000	$ 13,500,000	$ 3,800,000	$169,714,200	$ 238,808,300	$ 14,500	$ 15,500
2	5,152	$ 4,500,000	$ -	$ 3,481,500	$ -	$ -	$ -	$14,000,000	$ 19,200,000	$111,167,800	$ 152,349,300	$ 29,600	$ 20,800
3	12,515	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$56,000,000	$ 15,500,000	$49,742,300	$ 239,976,200	$ 19,200	$ 26,700
4	12,924	$ 8,700,000	$ 12,220,800	$ 5,291,900	$ -	$ -	$ -	$0	$ 3,300,000	$103,821,100	$ 133,333,800	$ 10,300	$ 16,000
5	13,740	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ -	$ 53,500,000	$ 8,000,000	$56,000,000	$ 18,400,000	$35,463,200	$ 203,097,100	$ 14,800	$ 16,900
6	13,773	$ 4,500,000	$ 2,802,300	$ 5,013,300	$ 8,073,300	$ -	$ -	$14,000,000	$ 5,100,000	$68,341,800	$ 107,830,700	$ 7,800	$ 11,100
7	17,114	$ 13,500,000	$ -	$ -	$ -	$ 53,500,000	$ 52,000,000	$27,000,000	$ 3,200,000	$198,652,000	$ 347,852,000	$ 20,300	$ 25,800
8	12,780	$ 4,500,000	$ -	$ 2,437,000	$ 8,073,300	$ 60,000,000	$ -	$27,000,000	$ 4,500,000	$234,780,600	$ 341,290,900	$ 26,700	$ 45,600
9	8,495	$ 9,000,000	$ 10,252,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$15,500,000	$ 9,700,000	$53,639,200	$ 188,573,100	$ 22,200	$ 26,600
10	4,226	$ 8,300,000	$ -	$ 3,481,500	$ -	$ -	$ -	$15,500,000	$ 7,100,000	$45,478,700	$ 79,860,200	$ 18,900	$ 7,200
11	26,219	$ 18,000,000	$ 5,395,100	$ 3,481,500	$ -	$ -	$ 27,000,000	$15,500,000	$ 5,800,000	$346,729,100	$ 421,905,700	$ 16,100	$ 20,700
12	6,888	$ 4,500,000	$ -	$ 3,481,500	$ -	$ -	$ 25,000,000	$14,000,000	$ 2,000,000	$173,057,300	$ 222,038,800	$ 32,200	$ 26,200
13	10,680	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ -	$ -	$ 27,000,000	$42,000,000	$ 8,500,000	$101,094,700	$ 205,828,600	$ 19,300	$ 11,100
14	18,801	$ 18,000,000	$ 10,252,400	$ -	$ 8,818,600	$ 53,500,000	$ -	$42,000,000	$ 7,100,000	$252,295,200	$ 391,966,200	$ 20,800	$ 29,300
15	8,004	$ 8,800,000	$ 2,385,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$14,000,000	$ 24,700,000	$189,471,100	$ 329,838,000	$ 41,200	$ 13,600
16	14,413	$ 18,000,000	$ 3,157,800	$ -	$ 8,073,300	$ 60,000,000	$ -	$42,000,000	$ 6,000,000	$54,408,400	$ 191,639,500	$ 13,300	$ 20,000
17	11,195	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$42,000,000	$ 13,400,000	$33,732,600	$ 203,366,500	$ 18,200	$ 8,400
18	2,381	$ -	$ -	$ -	$ -	$ -	$ -	$0	$ -	$21,372,100	$ 21,372,100	$ 9,000	$ 400
Total	215,812	$ 187,800,000	$ 99,696,600	$ 47,557,200	$ 41,111,800	$ 520,500,000	$ 274,000,000	$ 450,000,000	$ 219,200,000	$ 2,242,961,400	$ 4,082,827,000	$ 18,900	$ 14,600

Note: Utilities and Transportation totals are adjusted.

Table C-2a,b,c
Total Cost By Study Area
12/01 Gap Total Plus Build Out Total

Private Sector Cost

Area	Total Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total 12/01 + LUP Build Out Costs	Total Per Unit Cost (12/01 + Build Out)	Per Acre Cost
1	16,512	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 26,200,000	$3,959,600	$ 30,159,600	$ 1,800	$ 2,000
2	5,152	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 37,000,000	$33,085,300	$ 70,085,300	$ 13,600	$ 9,600
3	12,515	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 100,700,000	$51,414,500	$ 152,114,500	$ 12,200	$ 16,900
4	12,924	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 20,500,000	$5,237,500	$ 25,737,500	$ 2,000	$ 3,100
5	13,740	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 113,400,000	$77,129,400	$ 190,529,400	$ 13,900	$ 15,900
6	13,773	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 26,100,000	$22,186,100	$ 48,286,100	$ 3,500	$ 5,000
7	17,114	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 43,600,000	$7,547,400	$ 51,147,400	$ 3,000	$ 3,800
8	12,780	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 16,000,000	$5,374,000	$ 21,374,000	$ 1,700	$ 2,900
9	8,495	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 41,800,000	$33,499,100	$ 75,299,100	$ 8,900	$ 10,600
10	4,226	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 19,500,000	$30,207,900	$ 49,707,900	$ 11,800	$ 4,500
11	26,219	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 71,000,000	$28,804,300	$ 99,804,300	$ 3,800	$ 4,900
12	6,888	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 12,500,000	$0	$ 12,500,000	$ 1,800	$ 1,500
13	10,680	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 34,000,000	$79,031,200	$ 113,031,200	$ 10,600	$ 6,100
14	18,801	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 52,000,000	$45,246,900	$ 97,246,900	$ 5,200	$ 7,300
15	8,004	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 35,700,000	$23,631,600	$ 59,331,600	$ 7,400	$ 2,400
16	14,413	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 62,900,000	$35,706,600	$ 98,606,600	$ 6,800	$ 10,300
17	11,195	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 34,600,000	$98,282,900	$ 132,882,900	$ 11,900	$ 5,500
18	2,381	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$324,527,400	$ 324,727,400	$ 136,400	$ 5,400
Total	215,812	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 732,900,000	$ 904,871,700	$ 1,637,771,700	$ 7,600	$ 5,900

Note: Utilities and Transportation totals are adjusted.

Table C-2 d,e,f

Build-Out Cost By Study Area

Total Cost

Area	Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total LUP Build Out Costs	Per New Unit Cost at Build Out	Per Acre Cost
1	4,158	$ 4,500,000	$ 12,220,800	$ 0	$ 8,073,300	$ 0	$ 27,000,000	$13,500,000	$ 30,000,000	$56,350,900	$ 151,645,000	$ 36,500	$ 9,800
2	4,451	$ 4,500,000	$ 0	$ 3,481,500	$ 0	$ 0	$ 0	$14,000,000	$ 56,200,000	$119,967,900	$ 198,149,400	$ 44,500	$ 27,100
3	12,215	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$56,000,000	$ 116,200,000	$95,138,500	$ 386,072,400	$ 31,600	$ 43,000
4	3,039	$ 4,500,000	$ 1,968,400	$ 3,481,500	$ 0	$ 0	$ 0	$0	$ 23,800,000	$52,823,600	$ 86,573,500	$ 28,500	$ 10,400
5	13,198	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ 0	$ 53,500,000	$ 8,000,000	$56,000,000	$ 131,800,000	$109,267,600	$ 390,301,500	$ 29,600	$ 32,500
6	3,480	$ 4,500,000	$ 2,802,300	$ 2,297,800	$ 8,073,300	$ 0	$ 0	$14,000,000	$ 31,200,000	$16,641,700	$ 79,515,100	$ 22,800	$ 8,200
7	7,126	$ 9,000,000	$ 0	$ 0	$ 0	$ 53,500,000	$ 52,000,000	$27,000,000	$ 46,800,000	$78,604,900	$ 266,904,900	$ 37,500	$ 19,800
8	2,544	$ 4,500,000	$ 0	$ 0	$ 8,073,300	$ 60,000,000	$ 0	$13,500,000	$ 20,500,000	$94,434,500	$ 201,007,800	$ 79,000	$ 26,800
9	6,441	$ 9,000,000	$ 10,252,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$15,500,000	$ 51,500,000	$75,307,900	$ 252,041,800	$ 39,100	$ 35,500
10	2,035	$ 4,500,000	$ 0	$ 3,481,500	$ 0	$ 0	$ 0	$15,500,000	$ 26,600,000	$61,743,800	$ 111,825,300	$ 55,000	$ 10,100
11	10,867	$ 18,000,000	$ 5,395,100	$ 3,481,500	$ 0	$ 0	$ 27,000,000	$15,500,000	$ 76,800,000	$220,722,100	$ 366,898,700	$ 33,800	$ 18,000
12	2,041	$ 4,500,000	$ 0	$ 3,481,500	$ 0	$ 0	$ 25,000,000	$14,000,000	$ 14,500,000	$50,325,600	$ 111,807,100	$ 54,800	$ 13,200
13	8,729	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ 0	$ 0	$ 27,000,000	$42,000,000	$ 42,500,000	$155,446,800	$ 294,180,700	$ 33,700	$ 15,900
14	8,735	$ 13,500,000	$ 10,252,400	$ 0	$ 8,818,600	$ 53,500,000	$ 0	$42,000,000	$ 59,100,000	$147,743,500	$ 334,914,500	$ 38,300	$ 25,100
15	3,787	$ 4,500,000	$ 2,385,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$14,000,000	$ 60,400,000	$121,304,100	$ 293,071,000	$ 77,400	$ 12,000
16	10,934	$ 18,000,000	$ 3,157,800	$ 0	$ 8,073,300	$ 60,000,000	$ 0	$42,000,000	$ 68,900,000	$62,266,700	$ 262,397,800	$ 24,000	$ 27,400
17	9,474	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ 0	$ 60,000,000	$ 27,000,000	$42,000,000	$ 48,000,000	$132,015,500	$ 336,249,400	$ 35,500	$ 13,800
18	698	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$0	$ 200,000	$345,899,500	$ 346,099,500	$ 495,800	$ 5,800
Total	113,952	$ 166,500,000	$ 89,444,200	$ 40,594,300	$ 41,111,800	$ 520,500,000	$ 274,000,000	$ 436,500,000	$ 952,100,000	$ 1,996,005,100	$ 4,516,755,400	$ 39,600	$ 16,100

Note: Utilities and Transportation totals are adjusted.

Table C-2 d,e,f

Build-Out Cost By Study Area

Public Sector Cost

Area	Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total LUP Build Out Costs	Per New Unit Cost at Build Out	Per Acre Cost
1	4,158	$ 4,500,000	$ 12,220,800	$ -	$ 8,073,300	$ -	$ 27,000,000	$ 13,500,000	$ 3,800,000	$52,391,300	$ 121,485,400	$ 29,200	$ 7,900
2	4,451	$ 4,500,000	$ -	$ 3,481,500	$ -	$ -	$ -	$ 14,000,000	$ 19,200,000	$86,882,600	$ 128,064,100	$ 28,800	$ 17,500
3	12,215	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$ 56,000,000	$ 15,500,000	$43,724,000	$ 233,957,900	$ 19,200	$ 26,000
4	3,039	$ 4,500,000	$ 1,968,400	$ 3,481,500	$ -	$ -	$ -	$ -	$ 3,300,000	$47,586,100	$ 60,836,000	$ 20,000	$ 7,300
5	13,198	$ 18,000,000	$ 10,252,400	$ 3,481,500	$ -	$ 53,500,000	$ 8,000,000	$ 56,000,000	$ 18,400,000	$32,138,200	$ 199,772,100	$ 15,100	$ 16,600
6	3,480	$ 4,500,000	$ 2,802,300	$ 2,297,800	$ 8,073,300	$ -	$ -	$ 14,000,000	$ 5,100,000	($5,544,400)	$ 31,229,000	$ 9,000	$ 3,200
7	7,126	$ 9,000,000	$ -	$ -	$ -	$ 53,500,000	$ 52,000,000	$ 27,000,000	$ 3,200,000	$71,057,500	$ 215,757,500	$ 30,300	$ 16,000
8	2,544	$ 4,500,000	$ -	$ -	$ 8,073,300	$ 60,000,000	$ -	$ 13,500,000	$ 4,500,000	$89,060,500	$ 179,633,800	$ 70,600	$ 24,000
9	6,441	$ 9,000,000	$ 10,252,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$ 15,500,000	$ 9,700,000	$41,808,800	$ 176,742,700	$ 27,400	$ 24,900
10	2,035	$ 4,500,000	$ -	$ 3,481,500	$ -	$ -	$ -	$ 15,500,000	$ 7,100,000	$31,535,900	$ 62,117,400	$ 30,500	$ 5,600
11	10,867	$ 18,000,000	$ 5,395,100	$ 3,481,500	$ -	$ -	$ 27,000,000	$ 15,500,000	$ 5,800,000	$191,917,800	$ 267,094,400	$ 24,600	$ 13,100
12	2,041	$ 4,500,000	$ -	$ 3,481,500	$ -	$ -	$ 25,000,000	$ 14,000,000	$ 2,000,000	$50,325,600	$ 99,307,100	$ 48,700	$ 11,700
13	8,729	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ -	$ -	$ 27,000,000	$ 42,000,000	$ 8,500,000	$76,415,600	$ 181,149,500	$ 20,800	$ 9,800
14	8,735	$ 13,500,000	$ 10,252,400	$ -	$ 8,818,600	$ 53,500,000	$ -	$ 42,000,000	$ 7,100,000	$102,496,600	$ 237,667,600	$ 27,200	$ 17,800
15	3,787	$ 4,500,000	$ 2,385,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$ 14,000,000	$ 24,700,000	$97,672,500	$ 233,739,400	$ 61,700	$ 9,600
16	10,934	$ 18,000,000	$ 3,157,800	$ -	$ 8,073,300	$ 60,000,000	$ -	$ 42,000,000	$ 6,000,000	$26,560,100	$ 163,791,200	$ 15,000	$ 17,100
17	9,474	$ 13,500,000	$ 10,252,400	$ 3,481,500	$ -	$ 60,000,000	$ 27,000,000	$ 42,000,000	$ 13,400,000	$33,732,600	$ 203,366,500	$ 21,500	$ 8,400
18	698	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$21,372,100	$ 21,372,100	$ 30,600	$ 400
Total	113,952	$ 166,500,000	$ 89,444,200	$ 40,594,300	$ 41,111,800	$ 520,500,000	$ 274,000,000	$ 436,500,000	$ 219,200,000	$ 1,091,133,400	$ 2,878,983,700	$ 25,300	$ 10,300

Note: Utilities and Transportation totals are adjusted.

Table C-2 d,e,f

Build-Out Cost By Study Area

Private Sector Cost

Area	Residential Growth Potential (Dwellings)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total LUP Build Out Costs	Per New Unit Cost at Build Out	Per Acre Cost
1	4,158	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 26,200,000	$ 3,959,600	$ 30,159,600	$ 7,300	$ 2,000
2	4,451	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 37,000,000	$ 33,085,300	$ 70,085,300	$ 15,700	$ 9,600
3	12,215	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 100,700,000	$ 51,414,500	$ 152,114,500	$ 12,500	$ 16,900
4	3,039	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 20,500,000	$ 5,237,500	$ 25,737,500	$ 8,500	$ 3,100
5	13,198	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 113,400,000	$ 77,129,400	$ 190,529,400	$ 14,400	$ 15,900
6	3,480	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 26,100,000	$ 22,186,100	$ 48,286,100	$ 13,900	$ 5,000
7	7,126	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 43,600,000	$ 7,547,400	$ 51,147,400	$ 7,200	$ 3,800
8	2,544	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 16,000,000	$ 5,374,000	$ 21,374,000	$ 8,400	$ 2,900
9	6,441	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 41,800,000	$ 33,499,100	$ 75,299,100	$ 11,700	$ 10,600
10	2,035	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 19,500,000	$ 30,207,900	$ 49,707,900	$ 24,400	$ 4,500
11	10,867	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 71,000,000	$ 28,804,300	$ 99,804,300	$ 9,200	$ 4,900
12	2,041	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 12,500,000	$ -	$ 12,500,000	$ 6,100	$ 1,500
13	8,729	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 34,000,000	$ 79,031,200	$ 113,031,200	$ 12,900	$ 6,100
14	8,735	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 52,000,000	$ 45,246,900	$ 97,246,900	$ 11,100	$ 7,300
15	3,787	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 35,700,000	$ 23,631,600	$ 59,331,600	$ 15,700	$ 2,400
16	10,934	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 62,900,000	$ 35,706,600	$ 98,606,600	$ 9,000	$ 10,300
17	9,474	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 34,600,000	$ 98,282,900	$ 132,882,900	$ 14,000	$ 5,500
18	698	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 200,000	$ 324,527,400	$ 324,727,400	$ 465,200	$ 5,400
Total	113,952	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 732,900,000	$ 904,871,700	$ 1,637,771,700	$ 14,400	$ 5,900

Note: Utilities and Transportation totals are adjusted.

Table C-2g,h,i

12/31/01 Gap Cost By Study Area

Total Cost

Area	Existing Residential Units (12/31)	Existing Commercial (Sq. Feet) (12/31)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Cost Per Existing Unit	Per Acre Cost
1	12,354	6,913,352	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 117,322,900	$ 117,322,900	$ 9,500	$ 7,600
2	701	452,813	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 24,285,200	$ 24,285,200	$ 34,600	$ 3,300
3	300	8,799	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 6,018,300	$ 6,018,300	$ 20,100	$ 700
4	9,885	5,877,437	$ 4,200,000	$ 10,252,400	$ 1,810,400	$ 0	$ 0	$ 0	$ 0	$ 0	$ 56,235,000	$ 72,497,800	$ 7,300	$ 8,700
5	542	61,246	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 3,325,000	$ 3,325,000	$ 6,100	$ 300
6	10,293	2,199,029	$ 0	$ 0	$ 2,715,500	$ 0	$ 0	$ 0	$ 0	$ 0	$ 73,886,200	$ 76,601,700	$ 7,400	$ 7,900
7	9,988	3,062,433	$ 4,500,000	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 127,594,500	$ 132,094,500	$ 13,200	$ 9,800
8	10,236	5,674,827	$ 0	$ 0	$ 2,437,000	$ 0	$ 0	$ 0	$ 13,500,000	$ 0	$ 145,720,100	$ 161,657,100	$ 15,800	$ 21,600
9	2,054	209,109	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 11,830,400	$ 11,830,400	$ 5,800	$ 1,700
10	2,191	0	$ 3,800,000	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 13,942,800	$ 17,742,800	$ 8,100	$ 1,600
11	15,352	5,016,584	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 154,811,300	$ 154,811,300	$ 10,100	$ 7,600
12	4,847	16,904,927	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 122,731,700	$ 122,731,700	$ 25,300	$ 14,500
13	1,951	794,296	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 24,679,100	$ 24,679,100	$ 12,600	$ 1,300
14	10,066	4,393,485	$ 4,500,000	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 149,798,600	$ 154,298,600	$ 15,300	$ 11,500
15	4,217	9,389,758	$ 4,300,000	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 91,798,600	$ 96,098,600	$ 22,800	$ 3,900
16	3,479	325,275	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 27,848,300	$ 27,848,300	$ 8,000	$ 2,900
17	1,721	124,662	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ -	$ -
18	1,683	63,352	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ -	$ -
Total	101,860	61,471,384	$ 21,300,000	$ 10,252,400	$ 6,962,900	$ 0	$ 0	$ 0	$ 13,500,000	$ 0	$ 1,151,828,000	$ 1,203,843,300	$ 11,800	$ 4,300

Table C-2g,h,i

12/31/01 Gap Cost By Study Area

Public Sector Cost

Area	Existing Residential Units (12/31)	Existing Commercial (Sq. Feet) (12/31)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Cost Per Existing Unit	Per Acre Cost
1	12,354	6,913,352	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$117,322,900	$ 117,322,900	$ 9,500	$ 7,600
2	701	452,813	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$24,285,200	$ 24,285,200	$ 34,600	$ 3,300
3	300	8,799	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$6,018,300	$ 6,018,300	$ 20,100	$ 700
4	9,885	5,877,437	$4,200,000	$ 10,252,400	$ 1,810,400	$ -	$ -	$ -	$0	$ -	$56,235,000	$ 72,497,800	$ 7,300	$ 8,700
5	542	61,246	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$3,325,000	$ 3,325,000	$ 6,100	$ 300
6	10,293	2,199,029	$0	$ -	$ 2,715,500	$ -	$ -	$ -	$0	$ -	$73,886,200	$ 76,601,700	$ 7,400	$ 7,900
7	9,988	3,062,433	$4,500,000	$ -	$ -	$ -	$ -	$ -	$0	$ -	$127,594,500	$ 132,094,500	$ 13,200	$ 9,800
8	10,236	5,674,827	$0	$ -	$ 2,437,000	$ -	$ -	$ -	$13,500,000	$ -	$145,720,100	$ 161,657,100	$ 15,800	$ 21,600
9	2,054	209,109	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$11,830,400	$ 11,830,400	$ 5,800	$ 1,700
10	2,191	0	$3,800,000	$ -	$ -	$ -	$ -	$ -	$0	$ -	$13,942,800	$ 17,742,800	$ 8,100	$ 1,600
11	15,352	5,016,584	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$154,811,300	$ 154,811,300	$ 10,100	$ 7,600
12	4,847	16,904,927	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$122,731,700	$ 122,731,700	$ 25,300	$ 14,500
13	1,951	794,296	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$24,679,100	$ 24,679,100	$ 12,600	$ 1,300
14	10,066	4,393,485	$4,500,000	$ -	$ -	$ -	$ -	$ -	$0	$ -	$149,798,600	$ 154,298,600	$ 15,300	$ 11,500
15	4,217	9,389,758	$4,300,000	$ -	$ -	$ -	$ -	$ -	$0	$ -	$91,798,600	$ 96,098,600	$ 22,800	$ 3,900
16	3,479	325,275	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$27,848,300	$ 27,848,300	$ 8,000	$ 2,900
17	1,721	124,662	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$0	$ -	$ -	$ -
18	1,683	63,352	$0	$ -	$ -	$ -	$ -	$ -	$0	$ -	$0	$ -	$ -	$ -
Total	101,860	61,471,384	$21,300,000	$ 10,252,400	$ 6,962,900	$ -	$ -	$ -	$13,500,000	$ -	$ 1,151,828,000	$ 1,203,843,300	$ 11,800	$ 4,300

Table C-2g,h,i

12/31/01 Gap Cost By Study Area

Private Sector Cost

Area	Existing Residential Units (12/31)	Existing Commercial (Sq. Feet) (12/31)	Fire Stations	Libraries	Community Parks	Regional Parks	High Schools	Middle Schools	Elementary Schools	Utilities	Roads	Total Costs	Cost Per Existing Unit	Per Acre Cost
1	12,354	6,913,352	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
2	701	452,813	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
3	300	8,799	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
4	9,885	5,877,437	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
5	542	61,246	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
6	10,293	2,199,029	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
7	9,988	3,062,433	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
8	10,236	5,674,827	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
9	2,054	209,109	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
10	2,191	0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
11	15,352	5,016,584	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
12	4,847	16,904,927	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
13	1,951	794,296	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
14	10,066	4,393,485	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
15	4,217	9,389,758	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
16	3,479	325,275	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
17	1,721	124,662	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
18	1,683	63,352	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	
Total	101,860	61,471,384	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	

Note: Identified costs are those needed to meet existing level of service requirements.

* Per capita cost is calculated as cost per residential dwelling unit, the driver for level of service requirements.

** Costs calculated per acre of commercial development.

Table C-3a

Facilities Cost By Study Area

Fire Stations

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1									$ -	$ 4,500,000	$ -	$ 4,500,000	$ 4,500,000
2			$ -	$ -	$ -	$ 4,500,000	$ -	$ -	$ -	$ -	$ -	$ 4,500,000	$ 4,500,000
3		$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 18,000,000	$ 18,000,000
4	$ 4,200,000								$ -	$ 4,500,000	$ -	$ 4,500,000	$ 8,700,000
5		$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ -	$ 18,000,000	$ 18,000,000
6									$ -	$ 4,500,000	$ -	$ 4,500,000	$ 4,500,000
7	$ 4,500,000						$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 9,000,000	$ 13,500,000
8										$ -	$ 4,500,000	$ 4,500,000	$ 4,500,000
9				$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ -	$ 9,000,000	$ 9,000,000
10	$ 3,800,000						$ -	$ -	$ -	$ -	$ 4,500,000	$ 4,500,000	$ 8,300,000
11							$ -	$ 4,500,000	$ 4,500,000	$ 4,500,000	$ 4,500,000	$ 18,000,000	$ 18,000,000
12									$ -	$ -	$ 4,500,000	$ 4,500,000	$ 4,500,000
13			$ -	$ 4,500,000	$ -	$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ 13,500,000	$ 13,500,000
14	$ 4,500,000						$ -	$ 4,500,000	$ 4,500,000	$ -	$ 4,500,000	$ 13,500,000	$ 18,000,000
15	$ 4,300,000						$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ 8,800,000
16				$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ 18,000,000	$ 18,000,000
17			$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ 13,500,000	$ 13,500,000
18									$ -	$ -	$ -	$ -	$ -
Total	$ 21,300,000	$ -	$ 9,000,000	$ 9,000,000	$ 9,000,000	$13,500,000	$13,500,000	$ 22,500,000	$ 27,000,000	$ 31,500,000	$ 31,500,000	$ 166,500,000	$ 187,800,000

Source: Chesterfield County Planning Dept.

Table C-3b

Facilities Costs By Study Area

Libraries

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$ -								$ 1,968,400	$ -	$ 10,252,400	$ 12,220,800	$ 12,220,800
2	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,252,400	$ 10,252,400
4	$10,252,400								$ -	$ -	$ 1,968,400	$ 1,968,400	$ 12,220,800
5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ 10,252,400	$ 10,252,400
6	$ -								$ -	$ -	$ 2,802,300	$ 2,802,300	$ 2,802,300
7	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	$ -									$ -	$ -	$ -	$ -
9	$ -			$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ -	$ -	$ 10,252,400	$ 10,252,400
10	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	$ -						$ 3,705,300	$ 1,689,800	$ -	$ -	$ -	$ 5,395,100	$ 5,395,100
12	$ -								$ -	$ -	$ -	$ -	$ -
13	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,252,400	$ -	$ 10,252,400	$ 10,252,400
14	$ -						$ -	$ -	$ -	$ 10,252,400	$ -	$ 10,252,400	$ 10,252,400
15	$ -						$ -	$ 2,385,400	$ -	$ -	$ -	$ 2,385,400	$ 2,385,400
16	$ -			$ -	$ -	$ -	$ -	$ 3,157,800	$ -	$ -	$ -	$ 3,157,800	$ 3,157,800
17	$ -		$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ -	$ -	$ -	$ 10,252,400	$ 10,252,400
18	$ -								$ -	$ -	$ -	$ -	$ -
Total	$10,252,400	$ -	$ -	$ 10,252,400	$ -	$ 10,252,400	$ 13,957,700	$ 7,233,000	$ 12,220,800	$ 20,504,800	$ 15,023,100	$ 89,444,200	$ 99,696,600

Source: Chesterfield County Planning Dept.

Table C-3c

Facilities Cost By Study Area

Community Parks

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$ -								$ -	$ -	$ -	$ -	$ -
2	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,467	$ 3,481,467	$ 3,481,467
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,467	$ -	$ -	$ -	$ 3,481,467	$ 3,481,467
4	$ 1,810,363								$ -	$ 3,481,467	$ -	$ 3,481,467	$ 5,291,830
5	$ -	$ -	$ -	$ 3,481,467	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,467	$ 3,481,467
6	$ 2,715,544								$ -	$ -	$ 2,297,768	$ 2,297,768	$ 5,013,312
7	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	$ 2,437,027									$ -	$ -	$ -	$ 2,437,027
9	$ -			$ -	$ -	$ -	$ 3,481,467	$ -	$ -	$ -	$ -	$ 3,481,467	$ 3,481,467
10	$ -						$ -	$ -	$ -	$ 3,481,467	$ -	$ 3,481,467	$ 3,481,467
11	$ -						$ -	$ -	$ 3,481,467	$ -	$ -	$ 3,481,467	$ 3,481,467
12	$ -								$ -	$ 3,481,467	$ -	$ 3,481,467	$ 3,481,467
13	$ -		$ -	$ -	$ -	$ -	$ 3,481,467	$ -	$ -	$ -	$ -	$ 3,481,467	$ 3,481,467
14	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	$ -						$ -	$ -	$ 3,481,467	$ -	$ -	$ 3,481,467	$ 3,481,467
16	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	$ -		$ -	$ -	$ 3,481,467	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,467	$ 3,481,467
18	$ -								$ -	$ -	$ -	$ -	$ -
Total	$ 6,962,934	$ -	$ -	$ 3,481,467	$ 3,481,467	$ -	$ 6,962,934	$ 3,481,467	$ 6,962,934	$ 10,444,401	$ 5,779,235	$ 40,593,905	$ 47,556,839

Source: Chesterfield County Planning Dept.

Table C-3d

Facilities Cost By Study Area

Regional Parks

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$ 0								$ 8,073,330	$ -	$ -	$ 8,073,330	$ 8,073,330
2	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	$ -								$ -	$ -	$ -	$ -	$ -
5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	$ -								$ -	$ 8,073,330	$ -	$ 8,073,330	$ 8,073,330
7	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	$ -									$ -	$ 8,073,330	$ 8,073,330	$ 8,073,330
9	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	$ -								$ -	$ -	$ -	$ -	$ -
13	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	$ -						$ -	$ 8,818,560	$ -	$ -	$ -	$ 8,818,560	$ 8,818,560
15	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	$ -			$ -	$ -	$ -	$ 8,073,330	$ -	$ -	$ -	$ -	$ 8,073,330	$ 8,073,330
17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	$ -								$ -	$ -	$ -	$ -	$ -
Total	$0	$ -	$ -	$ -	$ -	$ -	$ 8,073,330	$ 8,818,560	$ 8,073,330	$ 8,073,330	$ 8,073,330	$ 41,111,880	$ 41,111,880

Source: Chesterfield County Planning Dept.

Table C-3e

Facilities Cost By Study Area

High Schools

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$ 0								$ -	$ -	$ -	$ -	$ 0
2	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ -	$ -	$ -	$ 60,000,000	$ 60,000,000
4	$ -								$ -	$ -	$ -	$ -	$ -
5	$ -	$ -	$ -	$ 53,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,500,000	$ 53,500,000
6	$ -								$ -	$ -	$ -	$ -	$ -
7	$ -						$ 53,500,000	$ -	$ -	$ -	$ -	$ 53,500,000	$ 53,500,000
8	$ -									$ 60,000,000	$ -	$ 60,000,000	$ 60,000,000
9	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ 60,000,000	$ 60,000,000
10	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	$ -								$ -	$ -	$ -	$ -	$ -
13	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	$ -						$ -	$ -	$ -	$ 53,500,000	$ -	$ 53,500,000	$ 53,500,000
15	$ -						$ -	$ -	$ -	$ -	$ 60,000,000	$ 60,000,000	$ 60,000,000
16	$ -			$ -	$ -	$ 60,000,000	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ 60,000,000
17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ -	$ -	$ 60,000,000	$ 60,000,000
18	$ -								$ -	$ -	$ -	$ -	$ -
Total	$ 0	$ -	$ -	$ 53,500,000	$ -	$ 60,000,000	$ 53,500,000	$ 60,000,000	$ 60,000,000	$ 113,500,000	$ 120,000,000	$ 520,500,000	$ 520,500,000

Source: Chesterfield County Planning Dept.

Table C-3f
Facilities Cost By Study Area

Middle Schools

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$ 0								$ -	$ -	$ 27,000,000	$ 27,000,000	$ 27,000,000
2	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ -	$ -	$ -	$ -	$ 27,000,000	$ 27,000,000
4	$ -								$ -	$ -	$ -	$ -	$ -
5	$ -	$ -	$ -	$ 8,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000,000	$ 8,000,000
6	$ -								$ -	$ -	$ -	$ -	$ -
7	$ -						$ -	$ 25,000,000	$ -	$ -	$ 27,000,000	$ 52,000,000	$ 52,000,000
8	$ -									$ -	$ -	$ -	$ -
9	$ -			$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ -	$ -	$ 27,000,000	$ 27,000,000
10	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	$ -						$ -	$ -	$ -	$ 27,000,000	$ -	$ 27,000,000	$ 27,000,000
12	$ -								$ 25,000,000	$ -	$ -	$ 25,000,000	$ 25,000,000
13	$ -		$ -	$ -	$ 27,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ 27,000,000
14	$ -						$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	$ -						$ -	$ -	$ -	$ 27,000,000	$ -	$ 27,000,000	$ 27,000,000
16	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	$ -		$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ -	$ -	$ -	$ 27,000,000	$ 27,000,000
18	$ -								$ -	$ -	$ -	$ -	$ -
Total	$ 0	$ -	$ -	$ 8,000,000	$ 27,000,000	$ -	$ 27,000,000	$ 52,000,000	$ 52,000,000	$ 54,000,000	$ 54,000,000	$ 274,000,000	$ 274,000,000

Source: Chesterfield County Planning Dept.

Table C-3g

Facilities Cost By Study Area

Elementary Schools

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$ -								$ -	$ -	$ 13,500,000	$ 13,500,000	$ 13,500,000
2	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000	$ 14,000,000
3	$ -	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ 56,000,000	$ 56,000,000
4	$ -								$ -	$ -	$ -	$ -	$ -
5	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ 56,000,000	$ 56,000,000
6	$ -								$ -	$ -	$ 14,000,000	$ 14,000,000	$ 14,000,000
7	$ -						$ -	$ -	$ 13,500,000	$ 13,500,000	$ -	$ 27,000,000	$ 27,000,000
8	$ 13,500,000									$ -	$ 13,500,000	$ 13,500,000	$ 27,000,000
9	$ -			$ -	$ -	$ -	$ -	$ -	$ 15,500,000	$ -	$ -	$ 15,500,000	$ 15,500,000
10	$ -						$ 15,500,000	$ -	$ -	$ -	$ -	$ 15,500,000	$ 15,500,000
11	$ -						$ -	$ -	$ -	$ 15,500,000	$ -	$ 15,500,000	$ 15,500,000
12	$ -								$ -	$ -	$ 14,000,000	$ 14,000,000	$ 14,000,000
13	$ -		$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ -	$ 14,000,000	$ -	$ 42,000,000	$ 42,000,000
14	$ -						$ 14,000,000	$ 14,000,000	$ -	$ 14,000,000	$ -	$ 42,000,000	$ 42,000,000
15	$ -						$ -	$ -	$ -	$ -	$ 14,000,000	$ 14,000,000	$ 14,000,000
16	$ -			$ -	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ 14,000,000	$ 42,000,000	$ 42,000,000
17	$ -		$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ -	$ -	$ 42,000,000	$ 42,000,000
18	$ -								$ -	$ -	$ -	$ -	$ -
Total	$ 13,500,000	$ 14,000,000	$ 28,000,000	$ 14,000,000	$ 28,000,000	$ 28,000,000	$ 57,500,000	$ 42,000,000	$ 43,000,000	$ 85,000,000	$ 97,000,000	$ 436,500,000	$ 450,000,000

Source: Chesterfield County Planning Dept.

Table C-3h

Facilities Cost By Study Area

Utilities

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$ -								$ 12,800,000	$ 8,600,000	$ 8,600,000	$ 30,000,000	$ 30,000,000
2	$ -		$ 34,600,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 56,200,000	$ 56,200,000
3	$ -	$ 57,700,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 116,200,000	$ 116,200,000
4	$ -								$ 10,400,000	$ 6,700,000	$ 6,700,000	$ 23,800,000	$ 23,800,000
5	$ -	$ 67,000,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 131,800,000	$ 131,800,000
6	$ -								$ 14,700,000	$ 9,300,000	$ 7,200,000	$ 31,200,000	$ 31,200,000
7	$ -						$ 8,600,000	$ 11,500,000	$ 8,900,000	$ 8,900,000	$ 8,900,000	$ 46,800,000	$ 46,800,000
8	$ -									$ 13,800,000	$ 6,700,000	$ 20,500,000	$ 20,500,000
9	$ -			$ 19,400,000	$ 5,700,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 51,500,000	$ 51,500,000
10	$ -						$ 17,800,000	$ 2,200,000	$ 2,200,000	$ 2,200,000	$ 2,200,000	$ 26,600,000	$ 26,600,000
11	$ -						$ 16,600,000	$ 19,400,000	$ 13,600,000	$ 13,600,000	$ 13,600,000	$ 76,800,000	$ 76,800,000
12	$ -								$ 7,500,000	$ 3,500,000	$ 3,500,000	$ 14,500,000	$ 14,500,000
13	$ -		$ 11,800,000	$ 5,500,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 42,500,000	$ 42,500,000
14	$ -						$ 20,300,000	$ 9,700,000	$ 9,700,000	$ 9,700,000	$ 9,700,000	$ 59,100,000	$ 59,100,000
15	$ -						$ 43,600,000	$ 4,200,000	$ 4,200,000	$ 4,200,000	$ 4,200,000	$ 60,400,000	$ 60,400,000
16	$ -			$ 14,600,000	$ 9,300,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 68,900,000	$ 68,900,000
17	$ -		$ 23,200,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 48,000,000	$ 48,000,000
18	$ -								$ 200,000	$ -	$ -	$ 200,000	$ 200,000
Total	$ -	$120,800,000	$ 75,300,000	$ 58,600,000	$ 37,400,000	$51,800,000	$ 192,300,000	$ 77,000,000	$ 118,800,000	$ 113,800,000	$ 106,300,000	$ 952,100,000	$ 952,100,000

Note: Totals are adjusted

Source: Chesterfield County Planning Dept.

Table C-3h

Facilities Cost By Study Area

Roads

Projected Costs At Each Growth Percentile

Area	Cost To Reach 12/01 Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Build Out Cost	Total Cost
1	$117,322,900								$ -	$ -	$ -	$56,350,900	$173,673,800
2	$24,285,200		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$119,967,900	$144,253,100
3	$6,018,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$95,138,500	$101,156,800
4	$56,235,000								$ -	$ -	$ -	$52,823,600	$109,058,600
5	$3,325,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$109,267,600	$112,592,600
6	$73,886,200								$ -	$ -	$ -	$16,641,700	$90,527,900
7	$127,594,500						$ -	$ -	$ -	$ -	$ -	$78,604,900	$206,199,400
8	$145,720,100									$ -	$ -	$94,434,500	$240,154,600
9	$11,830,400			$ -	$ -	$ -	$ -	$ -	$ -	$ -		$75,307,800	$87,138,200
10	$13,942,800						$ -	$ -	$ -	$ -	$ -	$61,743,800	$75,686,600
11	$154,811,300						$ -	$ -	$ -	$ -	$ -	$220,722,000	$375,533,300
12	$122,731,700								$ -	$ -	$ -	$50,325,600	$173,057,300
13	$24,679,100		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$155,446,800	$180,125,900
14	$149,798,600						$ -	$ -	$ -		$ -	$147,743,500	$297,542,100
15	$91,798,600						$ -	$ -	$ -	$ -		$121,304,100	$213,102,700
16	$27,848,300			$ -	$ -		$ -	$ -	$ -	$ -	$ -	$62,266,700	$90,115,000
17	$0		$ -	$ -	$ -	$ -	$ -	$ -		$ -	$ -	$132,015,500	$132,015,500
18	$0								$ -	$ -	$ -	$345,899,500	$345,899,500
Total	$ 1,151,828,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,996,004,900	$ 3,147,832,900

Note: Road costs were not broken down by percentile.

Source: Chesterfield County Planning Dept.

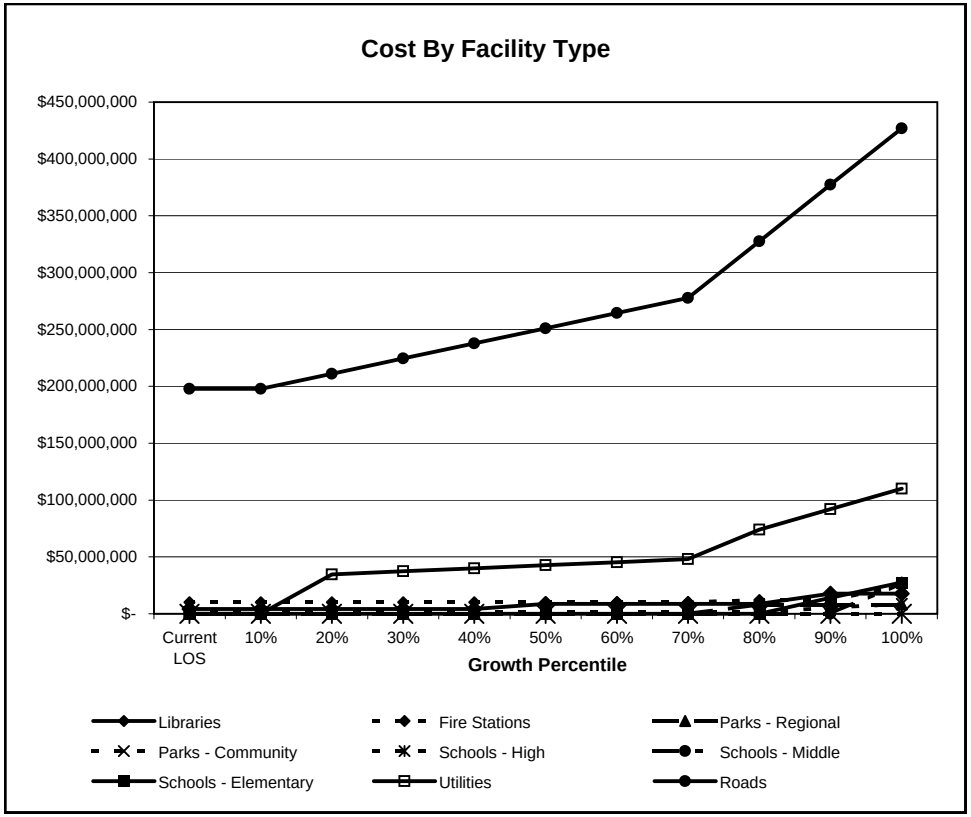
Table C-4a

Percentile Costs By Pods

Northern POD

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ 4,200,000	$ -	$ -	$ -	$ -	$ 4,500,000	$ -	$ -	$ -	$ 9,000,000	$ -	$ 17,700,000
Libraries	$ 10,252,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,968,400	$ -	$ 12,220,800	$ 24,441,600
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,073,300	$ -	$ -	$ 8,073,300
Parks - Community	$ 1,810,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,500	$ 3,481,500	$ 8,773,400
Schools - High	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Middle	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ 27,000,000
Schools - Elementary	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,000,000	$ 13,500,000	$ 27,500,000
Utilities	$ -	$ -	$ 34,600,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 25,900,000	$ 18,000,000	$ 18,000,000	$ 110,000,000
Roads	$ 197,843,100	$ -	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 49,721,300	$ 49,721,300	$49,721,300	$ 426,985,800
Total Cost	$ 214,105,900	$ -	$ 47,929,800	$ 16,029,800	$ 16,029,800	$ 20,529,800	$ 16,029,800	$ 16,029,800	$ 85,663,000	$ 94,202,800	$ 123,923,600	$ 650,474,100



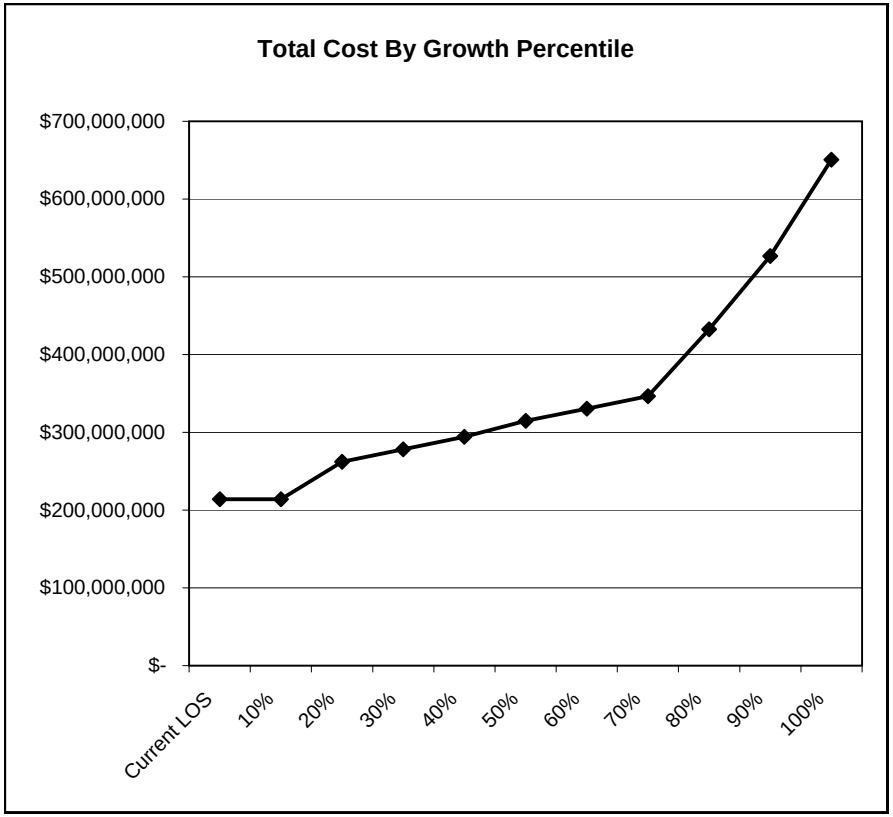


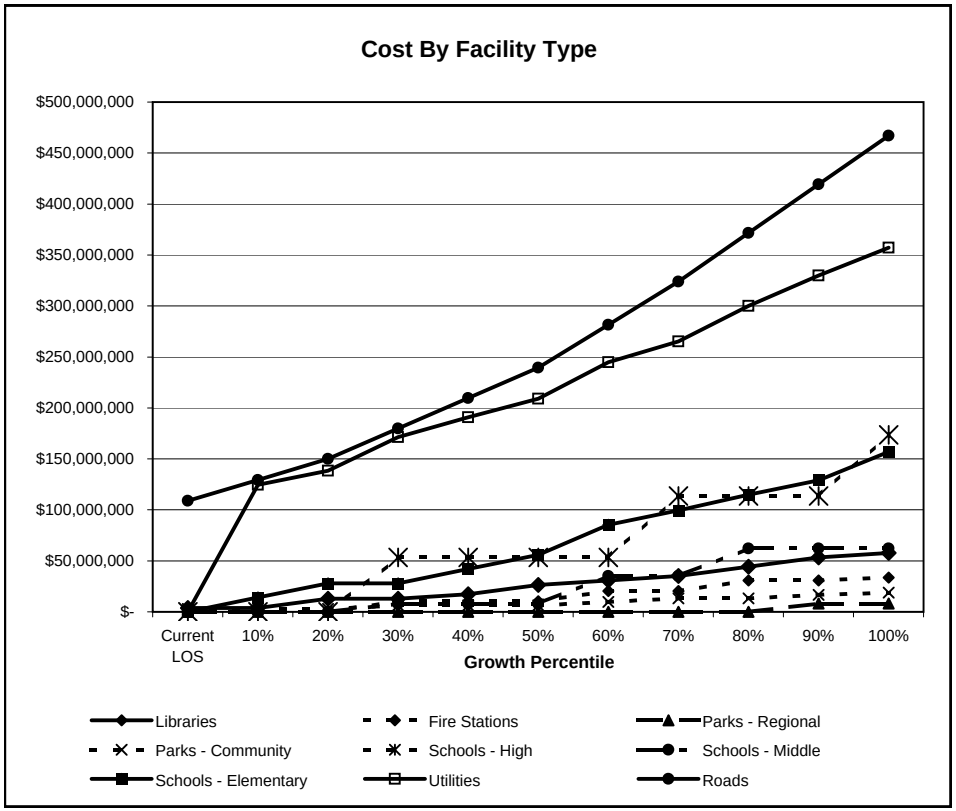
Table C-4b

Percentile Costs By Pods

Western POD

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ 3,800,000	$ -	$ 9,000,000	$ -	$ 4,500,000	$ 9,000,000	$ 4,500,000	$ 4,500,000	$ 9,000,000	$ 9,000,000	$ 4,500,000	$ 57,800,000
Libraries	$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ 10,252,400	$ -	$ 10,252,400	$ -	$ 2,802,300	$ 33,559,500
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,073,300	$ -	$ 8,073,300
Parks - Community	$ 2,715,500	$ -	$ -	$ 3,481,500	$ -	$ -	$ 3,481,500	$ 3,481,500	$ -	$ 3,481,500	$ 2,297,800	$ 18,939,300
Schools - High	$ -	$ -	$ -	$ 53,500,000	$ -	$ -	$ -	$ 60,000,000	$ -	$ -	$ 60,000,000	$ 173,500,000
Schools - Middle	$ -	$ -	$ -	$ 8,000,000	$ -	$ -	$ 27,000,000	$ -	$ 27,000,000	$ -	$ -	$ 62,000,000
Schools - Elementary	$ -	$ 14,000,000	$ 14,000,000	$ -	$ 14,000,000	$ 14,000,000	$ 29,500,000	$ 14,000,000	$ 15,500,000	$ 14,000,000	$ 28,000,000	$ 157,000,000
Utilities	$ -	$ 124,700,000	$ 13,700,000	$ 33,100,000	$ 19,400,000	$ 18,100,000	$ 35,900,000	$ 20,300,000	$ 35,000,000	$ 29,600,000	$ 27,500,000	$ 357,300,000
Roads	$ 109,002,700	$ 20,440,700	$ 20,440,700	$ 29,854,200	$ 29,854,200	$ 29,854,200	$ 42,203,000	$ 42,203,000	$ 47,750,200	$ 47,750,200	$47,750,200	$ 467,103,300
Total Cost	$ 115,518,200	$ 159,140,700	$ 57,140,700	$ 138,188,100	$ 67,754,200	$ 70,954,200	$ 152,836,900	$ 144,484,500	$ 144,502,600	$ 111,905,000	$ 172,850,300	$ 1,335,275,400



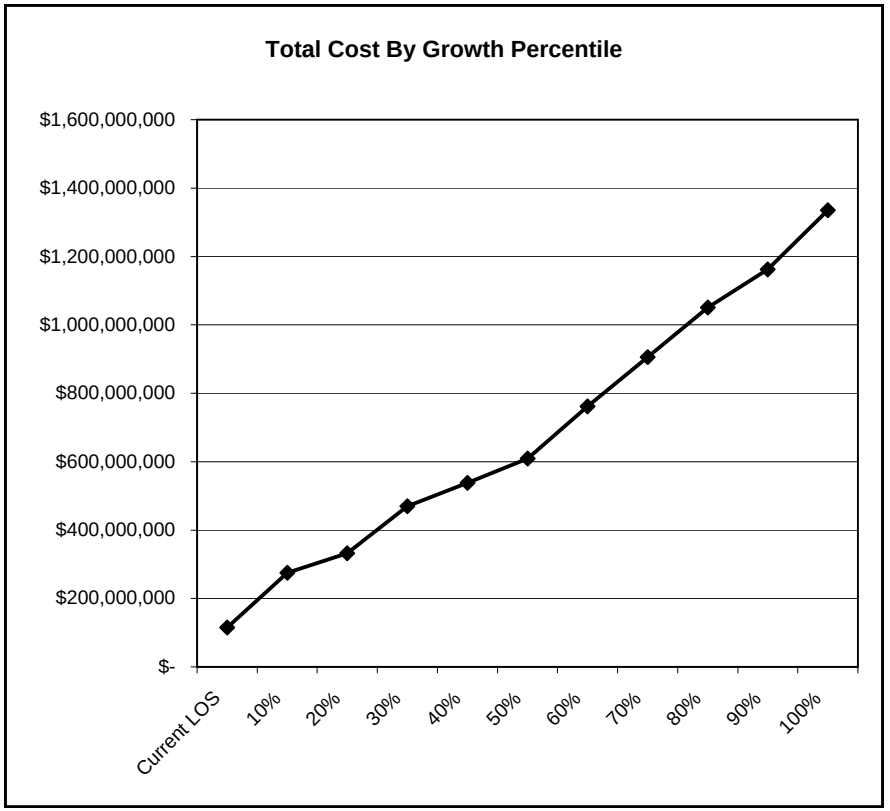


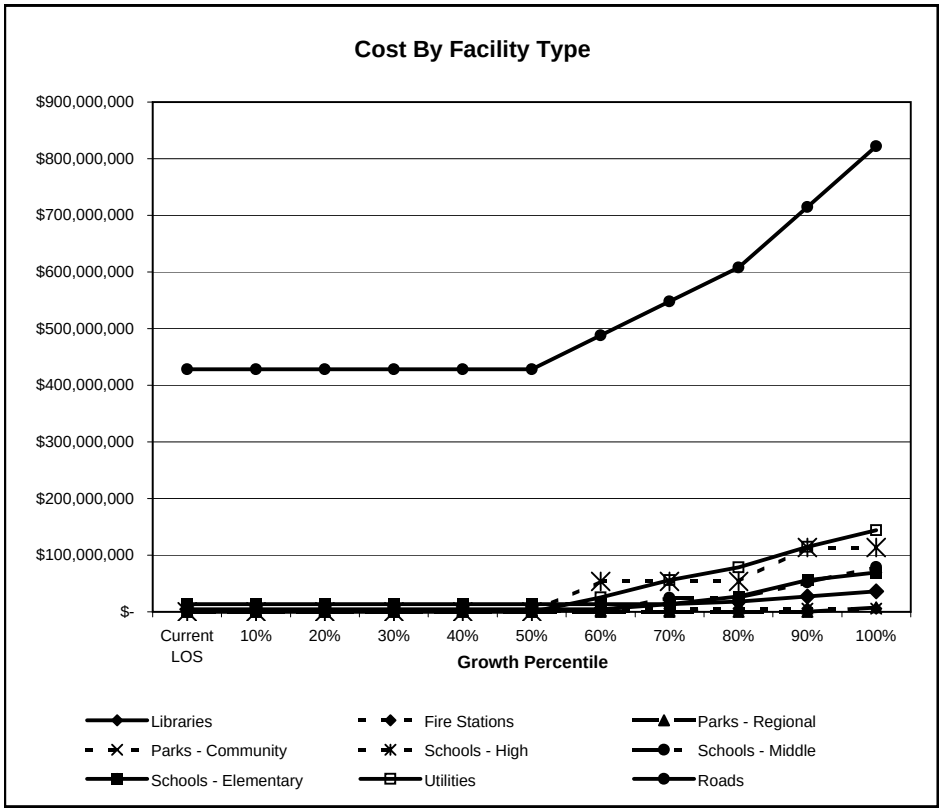
Table C-4c

Percentile Costs By Pods

Central POD

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ 4,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,000,000	$ 4,500,000	$ 9,000,000	$ 9,000,000	$ 36,000,000
Libraries	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,705,300	$ 1,689,800	$ -	$ -	$ -	$ 5,395,100
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,073,300	$ 8,073,300
Parks - Community	$ 2,437,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,500	$ -	$ -	$ 5,918,500
Schools - High	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,500,000	$ -	$ -	$ 60,000,000	$ -	$ 113,500,000
Schools - Middle	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000,000	$ -	$ 27,000,000	$ 27,000,000	$ 79,000,000
Schools - Elementary	$ 13,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,500,000	$ 29,000,000	$ 13,500,000	$ 69,500,000
Utilities	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,200,000	$ 30,900,000	$ 22,500,000	$ 36,300,000	$ 29,200,000	$ 144,100,000
Roads	$ 428,125,900	$ -	$ -	$ -	$ -	$ -	$ 59,865,400	$ 59,865,400	$ 59,865,400	$ 107,082,700	$107,082,700	$ 821,887,500
Total Cost	$ 448,562,900	$ -	$ -	$ -	$ -	$ -	$ 142,270,700	$ 126,455,200	$ 103,846,900	$ 268,382,700	$ 193,856,000	$ 1,283,374,400



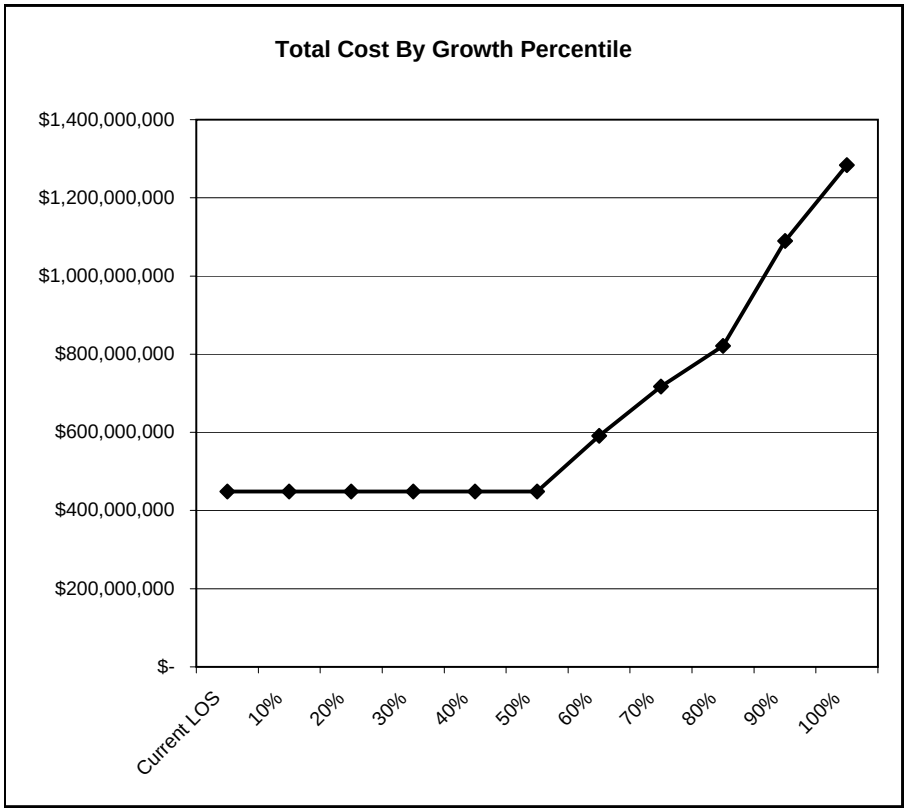


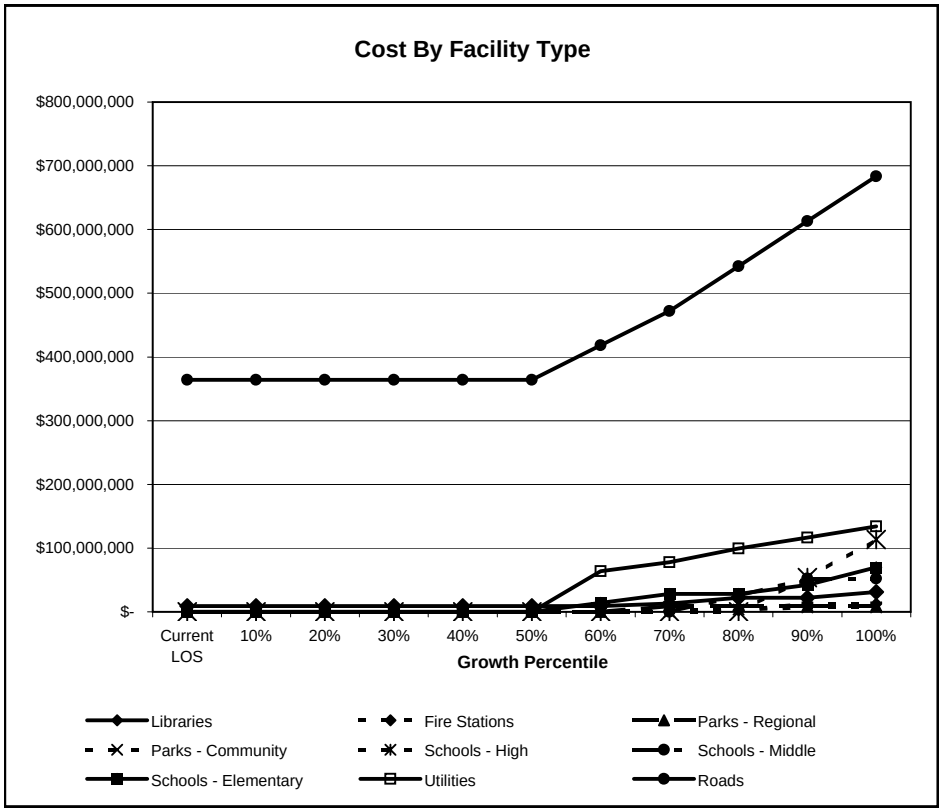
Table C-4d

Percentile Costs By Pods

Eastern POD

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ 8,800,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,500,000	$ 9,000,000	$ -	$ 9,000,000	$ 31,300,000
Libraries	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,385,400	$ -	$ 10,252,400	$ -	$ 12,637,800
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,818,600	$ -	$ -	$ -	$ 8,818,600
Parks - Community	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,500	$ 3,481,500	$ -	$ 6,963,000
Schools - High	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,500,000	$ 60,000,000	$ 113,500,000
Schools - Middle	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000,000	$ 27,000,000	$ -	$ 52,000,000
Schools - Elementary	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,000,000	$ 14,000,000	$ -	$ 14,000,000	$ 28,000,000	$ 70,000,000
Utilities	$ -	$ -	$ -	$ -	$ -	$ -	$ 63,900,000	$ 13,900,000	$ 21,400,000	$ 17,400,000	$ 17,400,000	$ 134,000,000
Roads	$ 364,328,900	$ -	$ -	$ -	$ -	$ -	$ 53,809,500	$ 53,809,500	$ 70,584,700	$ 70,584,700	$70,584,700	$ 683,702,000
Total Cost	$ 373,128,900	$ -	$ -	$ -	$ -	$ -	$ 131,709,500	$ 97,413,500	$ 129,466,200	$ 196,218,600	$ 184,984,700	$ 1,112,921,400



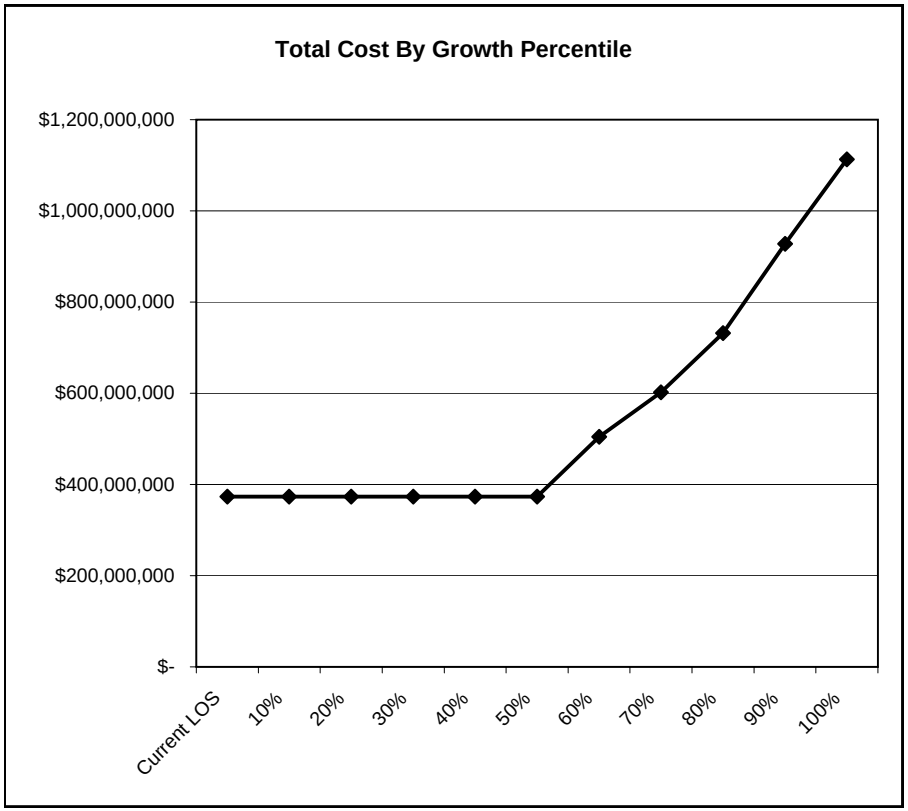


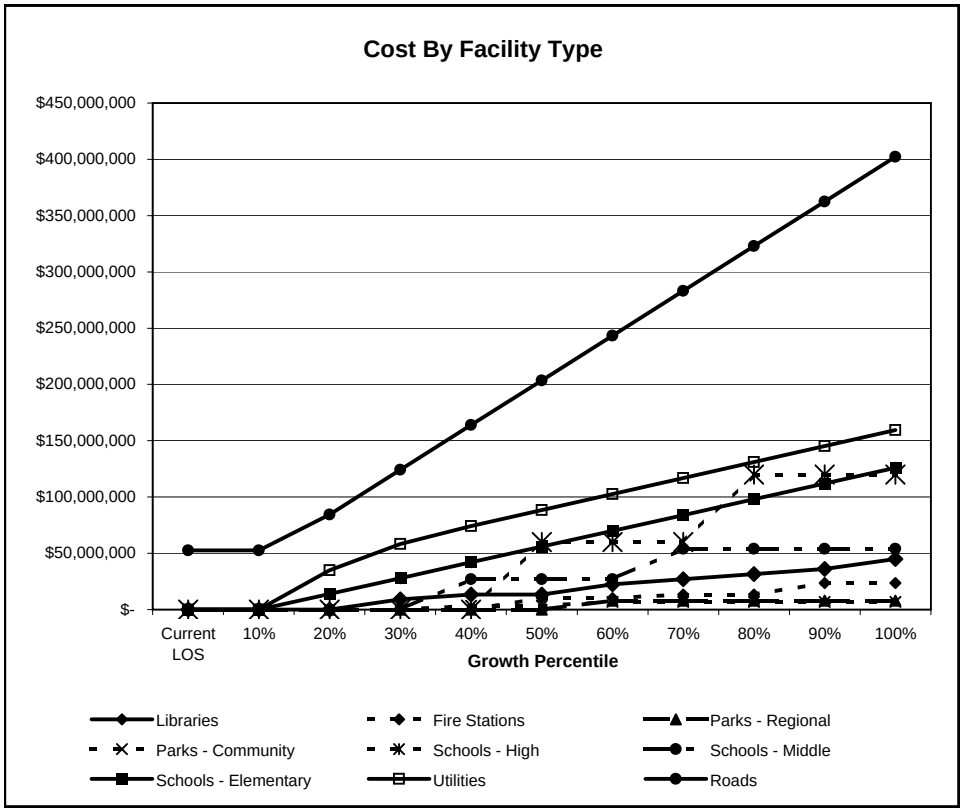
Table C-4e

Percentile Costs By Pods

Southern POD

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -	$ -	$ -	$ 9,000,000	$ 4,500,000	$ -	$ 9,000,000	$ 4,500,000	$ 4,500,000	$ 4,500,000	$ 9,000,000	$ 45,000,000
Libraries	$ -	$ -	$ -	$ -	$ -	$ 10,252,400	$ -	$ 3,157,800	$ -	$ 10,252,400	$ -	$ 23,662,600
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,073,300	$ -	$ -	$ -	$ -	$ 8,073,300
Parks - Community	$ -	$ -	$ -	$ -	$ 3,481,500	$ -	$ 3,481,500	$ -	$ -	$ -	$ -	$ 6,963,000
Schools - High	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ -	$ -	$ 60,000,000	$ -	$ -	$ 120,000,000
Schools - Middle	$ -	$ -	$ -	$ -	$ 27,000,000	$ -	$ -	$ 27,000,000	$ -	$ -	$ -	$ 54,000,000
Schools - Elementary	$ -	$ -	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 126,000,000
Utilities	$ -	$ -	$ 35,000,000	$ 23,200,000	$ 16,000,000	$ 14,200,000	$ 14,200,000	$ 14,200,000	$ 14,200,000	$ 14,200,000	$ 14,200,000	$ 159,400,000
Roads	$ 52,527,400	$ -	$ 31,940,300	$ 39,723,600	$ 39,723,600	$ 39,723,600	$ 39,723,600	$ 39,723,600	$ 39,723,600	$ 39,723,600	$39,723,600	$ 402,256,500
Total Cost	$ 52,527,400	$ -	$ 80,940,300	$ 85,923,600	$ 104,705,100	$ 138,176,000	$ 88,478,400	$ 102,581,400	$ 132,423,600	$ 82,676,000	$ 76,923,600	$ 945,355,400



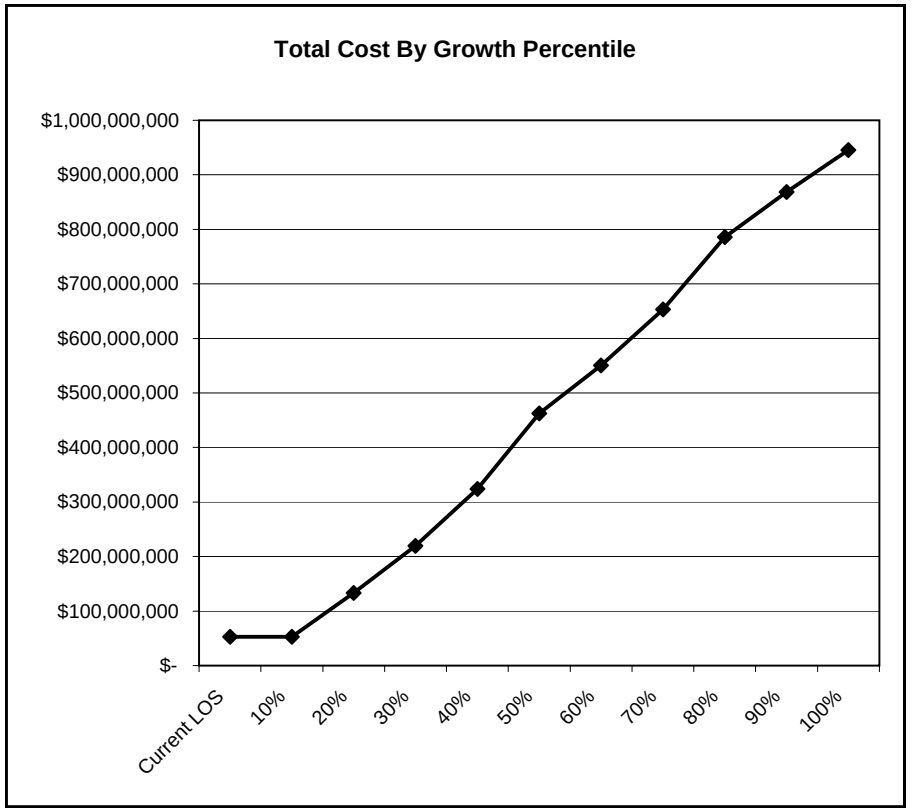


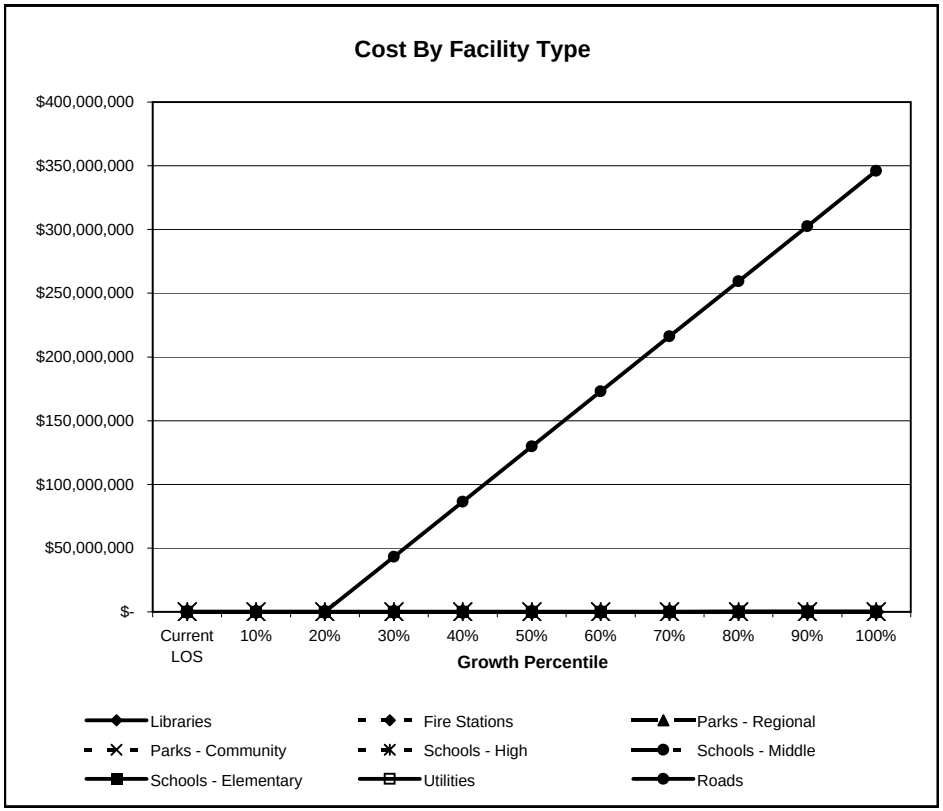
Table C-4f

Percentile Costs By Pods

Deferred Growth POD

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Libraries	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - High	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Middle	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Elementary	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Utilities	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000
Roads	$ -	$ -	$ -	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$43,237,400	$ 345,899,200
Total Cost	$ -	$ -	$ -	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,437,400	$ 43,237,400	$ 43,237,400	$ 346,099,200



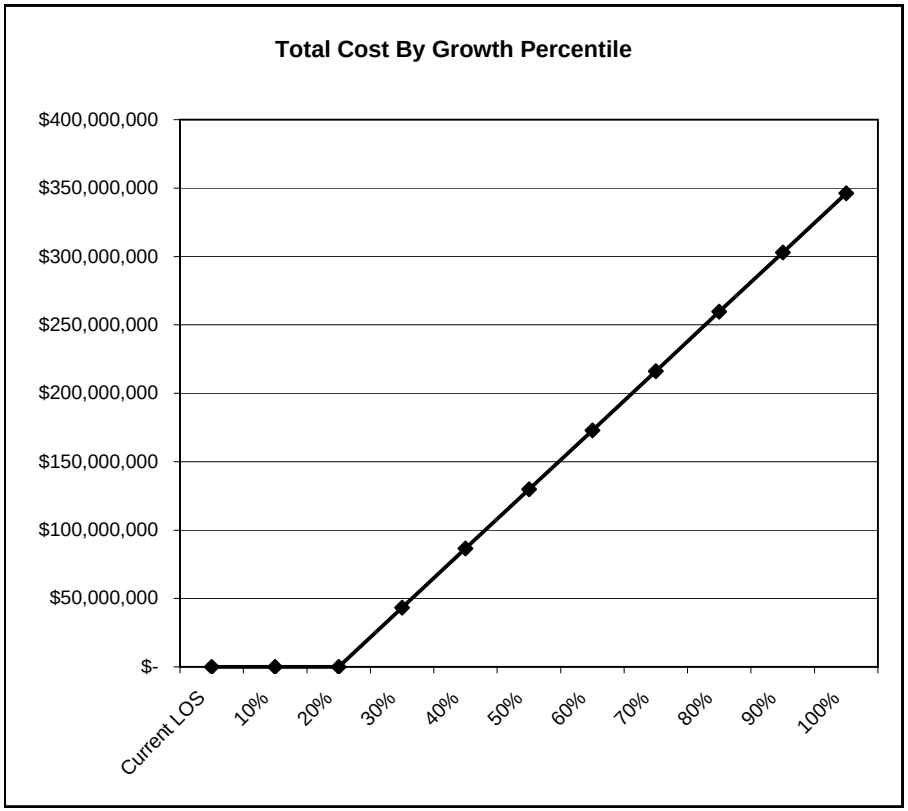


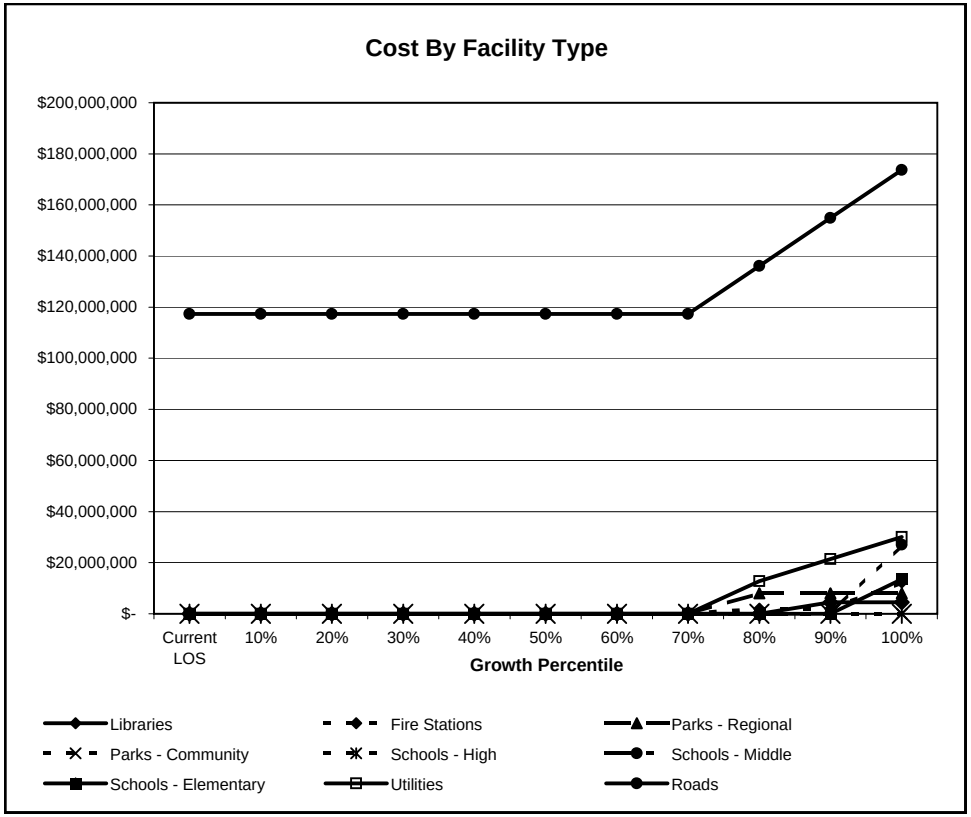
Table C-5a

Percentile Costs By Study Area

Area 1

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -								$ -	$ 4,500,000	$ -	$ 4,500,000
Libraries	$ -								$ 1,968,400	$ -	$ 10,252,400	$ 12,220,800
Parks - Regional	$ -								$ 8,073,300	$ -	$ -	$ 8,073,300
Parks - Community	$ -								$ -	$ -	$ -	$ -
Schools - High	$ -								$ -	$ -	$ -	$ -
Schools - Middle	$ -								$ -	$ -	$ 27,000,000	$ 27,000,000
Schools - Elementary	$ -								$ -	$ -	$ 13,500,000	$ 13,500,000
Utilities	$ -								$ 12,800,000	$ 8,600,000	$ 8,600,000	$ 30,000,000
Roads	$117,322,900								$ 18,783,600	$ 18,783,600	$ 18,783,600	$ 173,673,700
Total Cost	$ 117,322,900								$ 41,625,300	$ 31,883,600	$ 78,136,000	$ 268,967,800



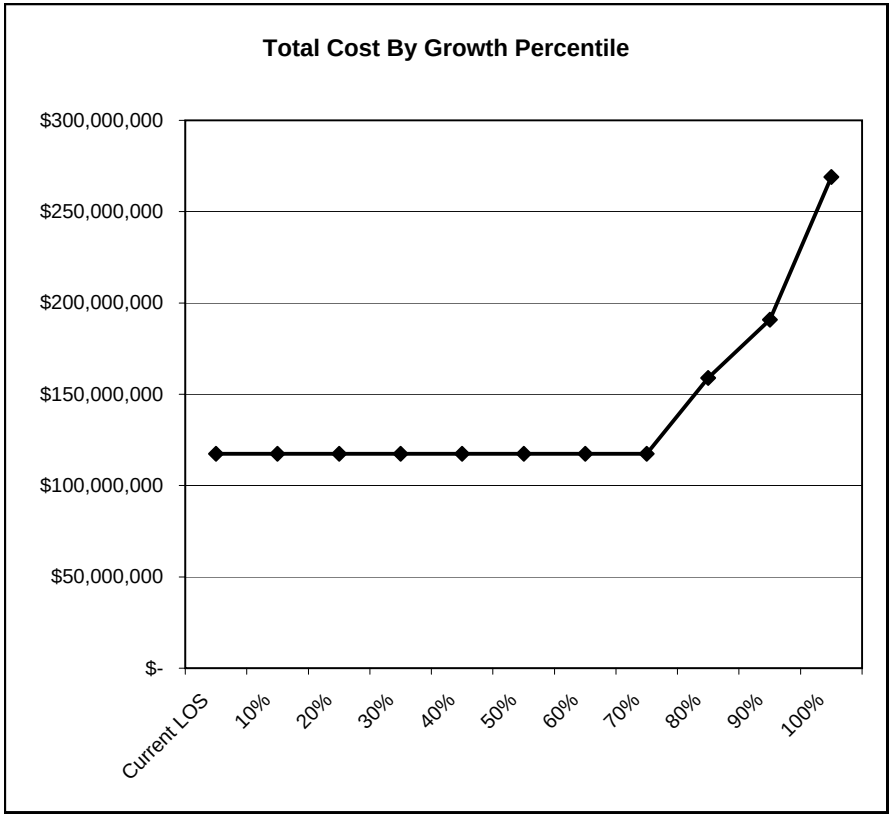


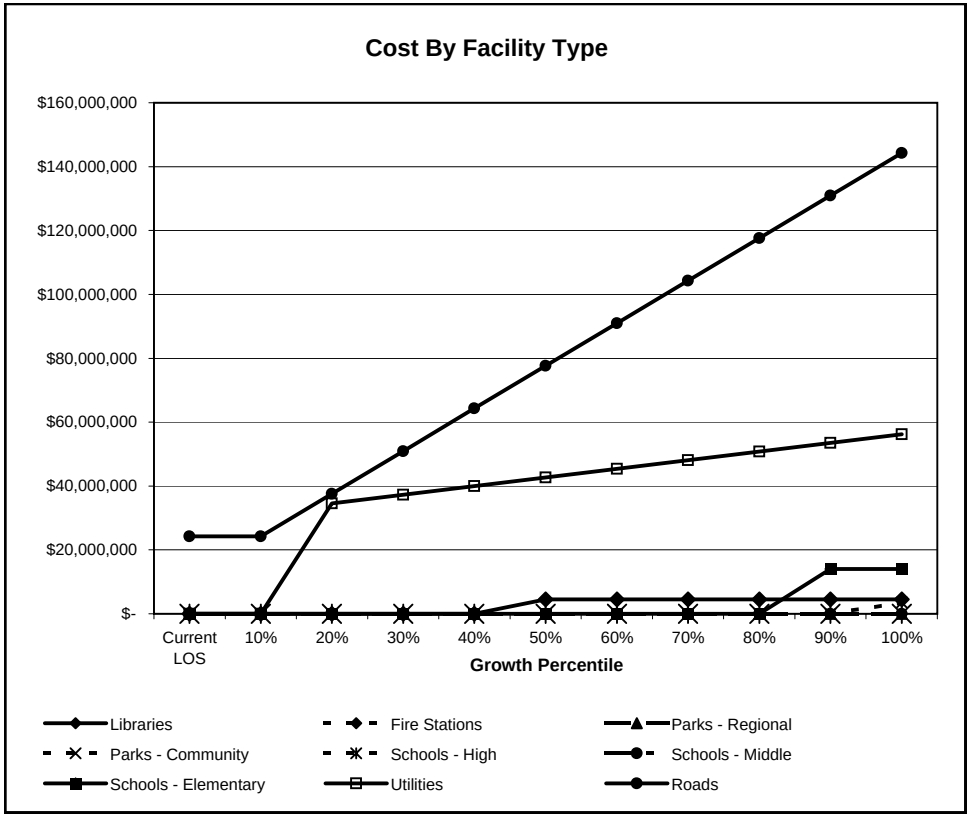
Table C-5b

Percentile Costs By Study Area

Area 2

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -		$ -	$ -	$ -	$ 4,500,000	$ -	$ -	$ -	$ -	$ -	$ 4,500,000
Libraries	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Regional	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,500	$ 3,481,500
Schools - High	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Middle	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Elementary	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000
Utilities	$ -		$ 34,600,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 56,200,000
Roads	$ 24,285,200		$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 13,329,800	$ 144,253,400
Total Cost	$ 24,285,200		$ 47,929,800	$ 16,029,800	$ 16,029,800	$ 20,529,800	$ 16,029,800	$ 16,029,800	$ 16,029,800	$ 30,029,800	$ 19,511,300	$ 222,434,900



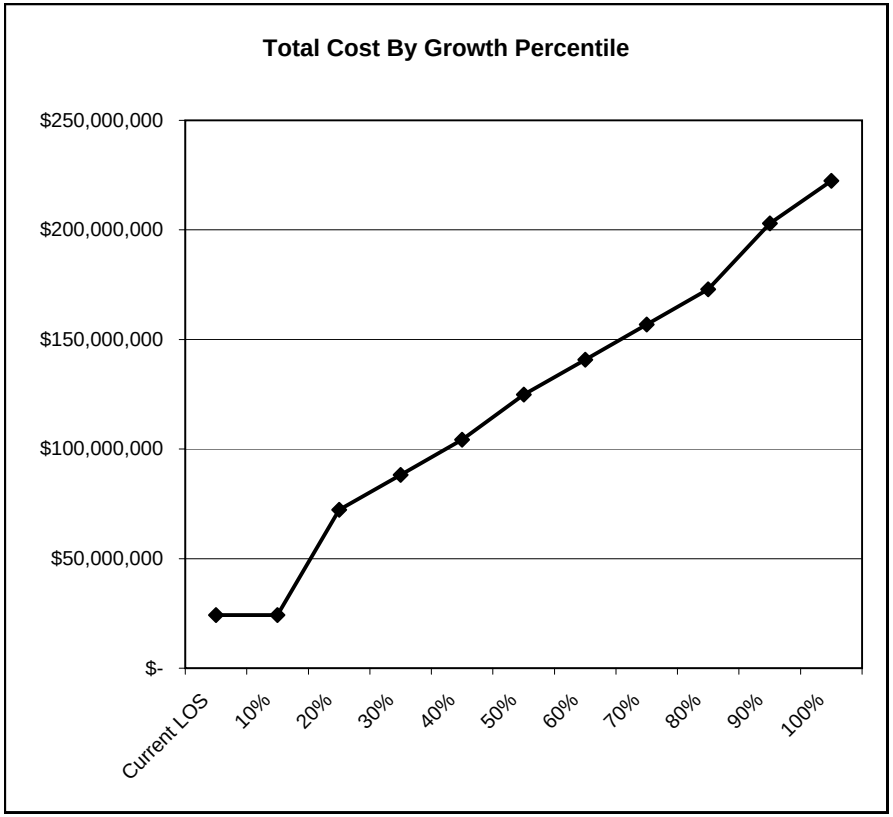


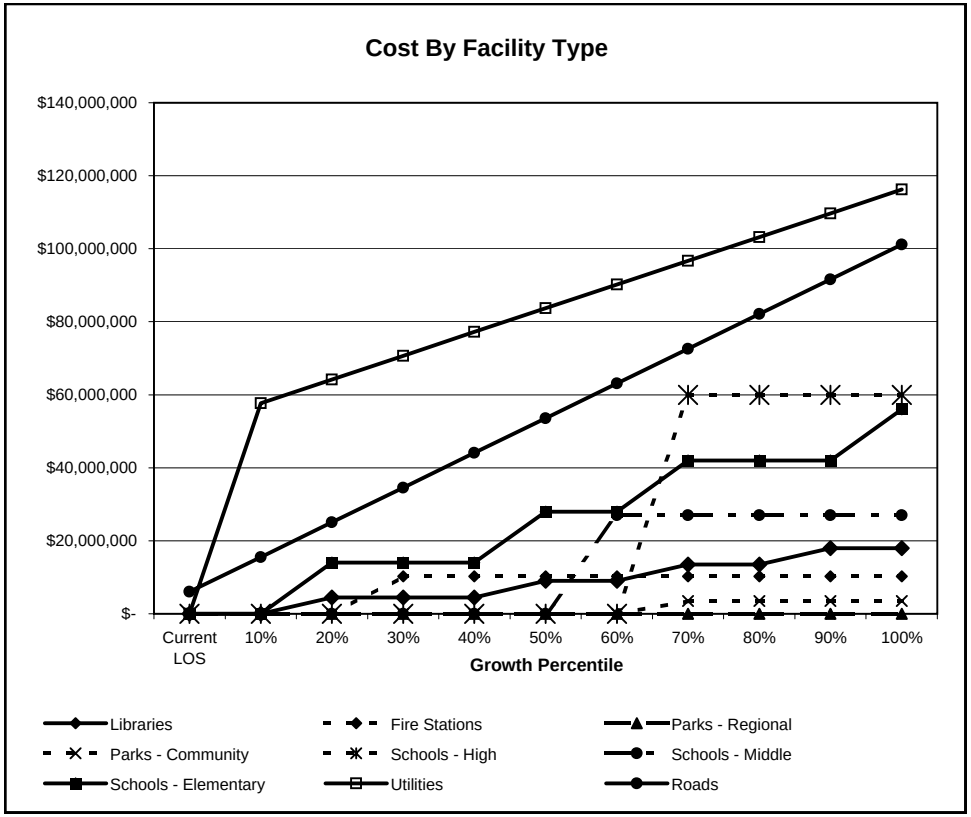
Table C-5c

Percentile Costs By Study Area

Area 3

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 18,000,000
Libraries	$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,252,400
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,500	$ -	$ -	$ -	$ 3,481,500
Schools - High	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ -	$ -	$ -	$ 60,000,000
Schools - Middle	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ -	$ -	$ -	$ -	$ 27,000,000
Schools - Elementary	$ -	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ 56,000,000
Utilities	$ -	$ 57,700,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 116,200,000
Roads	$ 6,018,300	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 9,513,900	$ 101,157,300
Total Cost	$ 6,018,300	$ 67,213,900	$ 34,513,900	$ 26,266,300	$ 16,013,900	$ 34,513,900	$ 43,013,900	$ 97,995,400	$ 16,013,900	$ 20,513,900	$ 30,013,900	$ 392,091,200



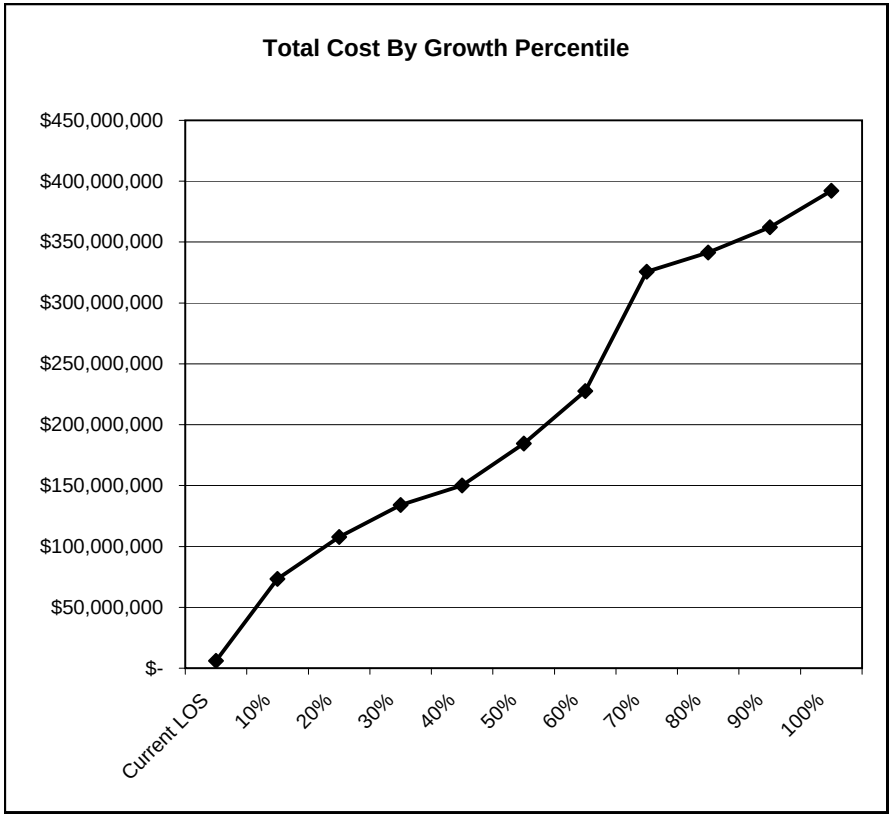


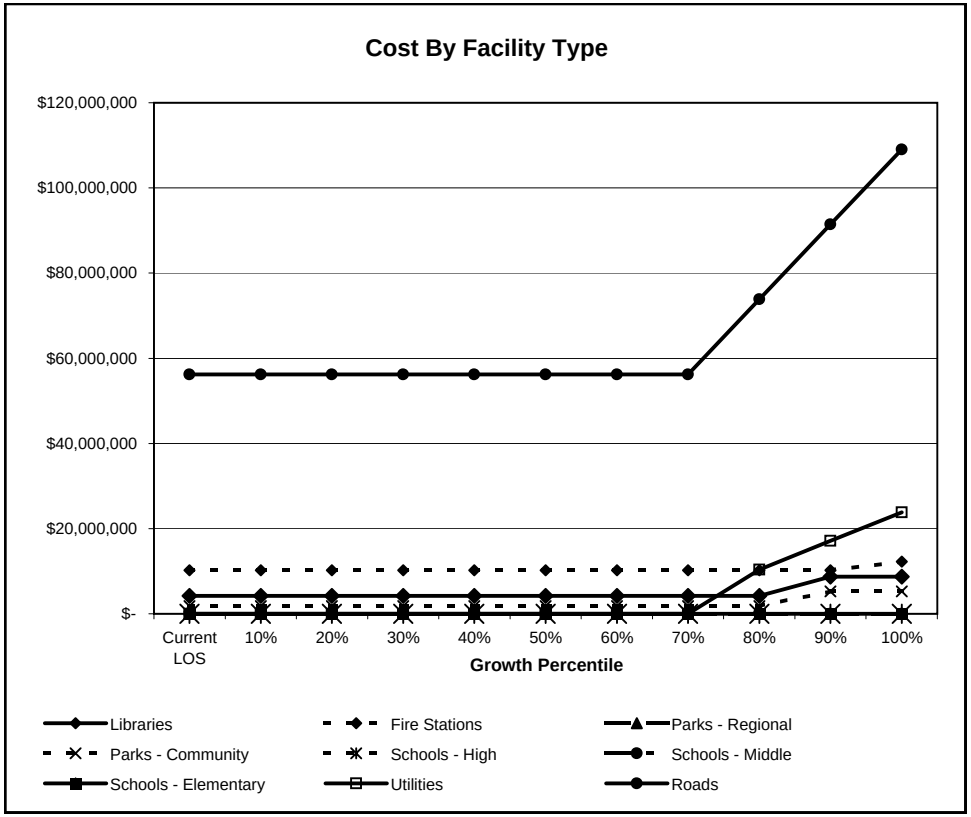
Table C-5d

Percentile Costs By Study Area

Area 4

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ 4,200,000								$ -	$ 4,500,000	$ -	$ 8,700,000
Libraries	$ 10,252,400								$ -	$ -	$ 1,968,400	$ 12,220,800
Parks - Regional	$ -								$ -	$ -	$ -	$ -
Parks - Community	$ 1,810,400								$ -	$ 3,481,500	$ -	$ 5,291,900
Schools - High	$ -								$ -	$ -	$ -	$ -
Schools - Middle	$ -								$ -	$ -	$ -	$ -
Schools - Elementary	$ -								$ -	$ -	$ -	$ -
Utilities	$ -								$ 10,400,000	$ 6,700,000	$ 6,700,000	$ 23,800,000
Roads	$ 56,235,000								$ 17,607,900	$ 17,607,900	$ 17,607,900	$ 109,058,700
Total Cost	$ 72,497,800								$ 28,007,900	$ 32,289,400	$ 26,276,300	$ 159,071,400



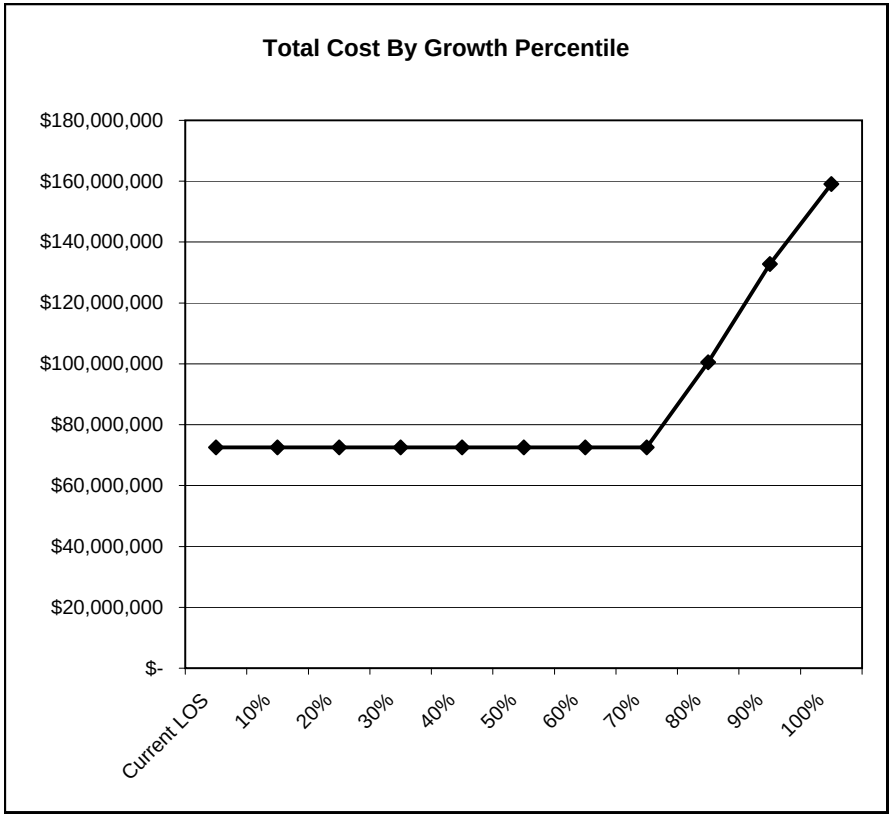


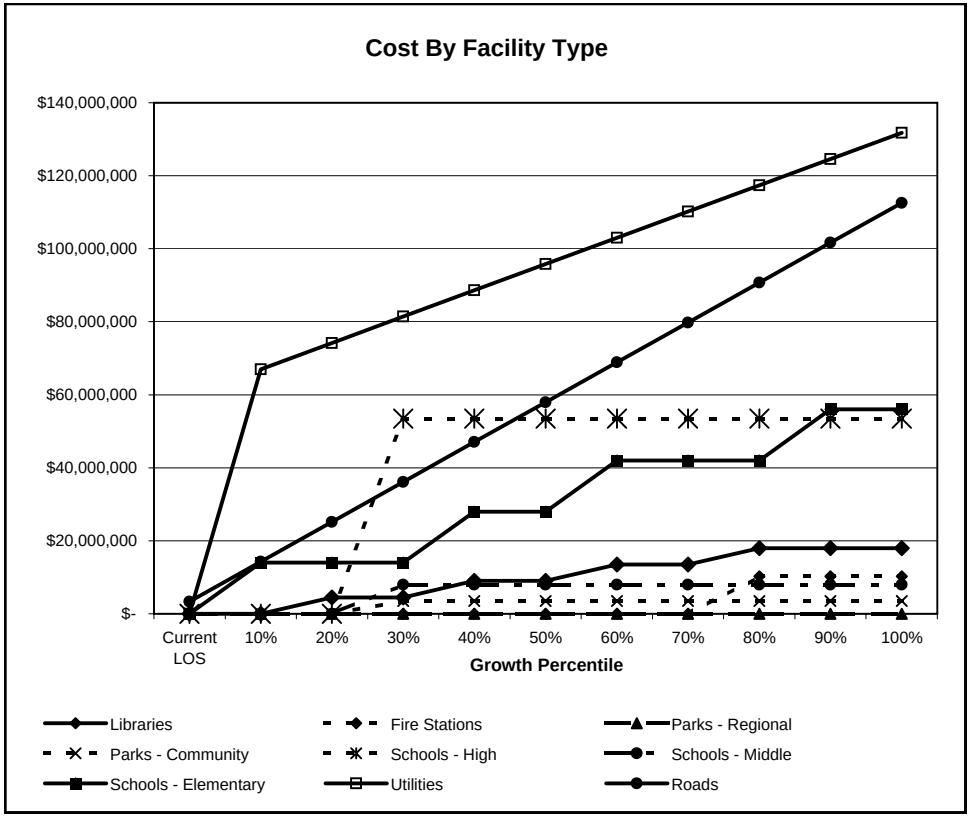
Table C-5e

Percentile Costs By Study Area

Area 5

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ -	$ 18,000,000
Libraries	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ 10,252,400
Parks - Regional	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -	$ -	$ -	$ 3,481,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,500
Schools - High	$ -	$ -	$ -	$ 53,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,500,000
Schools - Middle	$ -	$ -	$ -	$ 8,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000,000
Schools - Elementary	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ 56,000,000
Utilities	$ -	$ 67,000,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 131,800,000
Roads	$ 3,325,000	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 10,926,800	$ 112,593,000
Total Cost	$ 3,325,000	$ 91,926,800	$ 22,626,800	$ 83,108,300	$ 36,626,800	$ 18,126,800	$ 36,626,800	$ 18,126,800	$ 32,879,200	$ 32,126,800	$ 18,126,800	$ 393,626,900



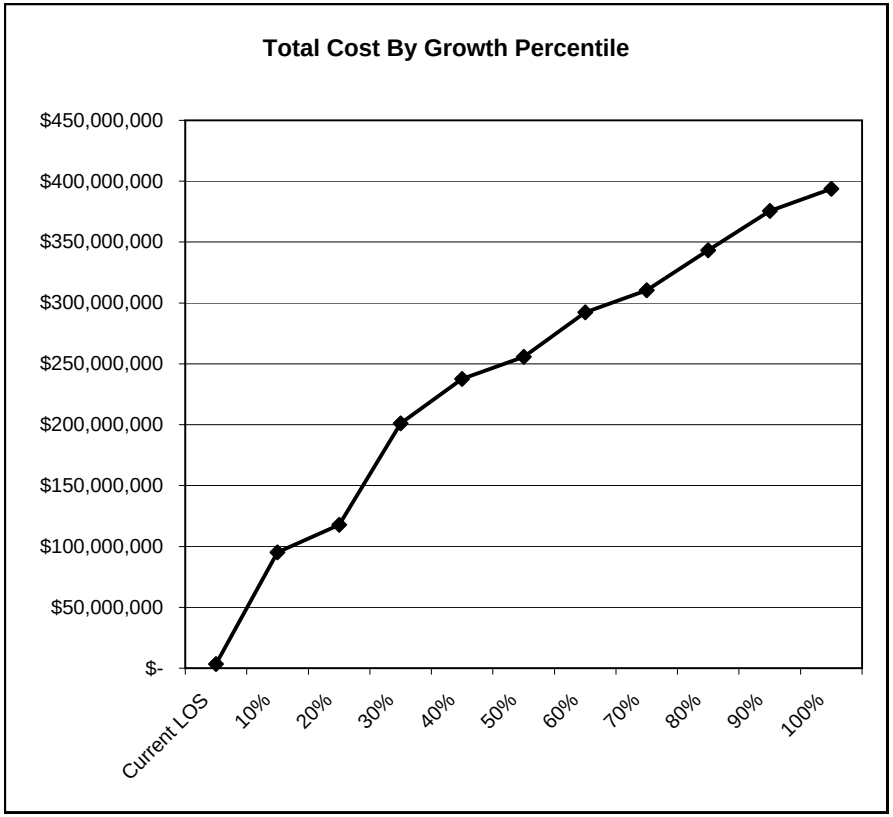


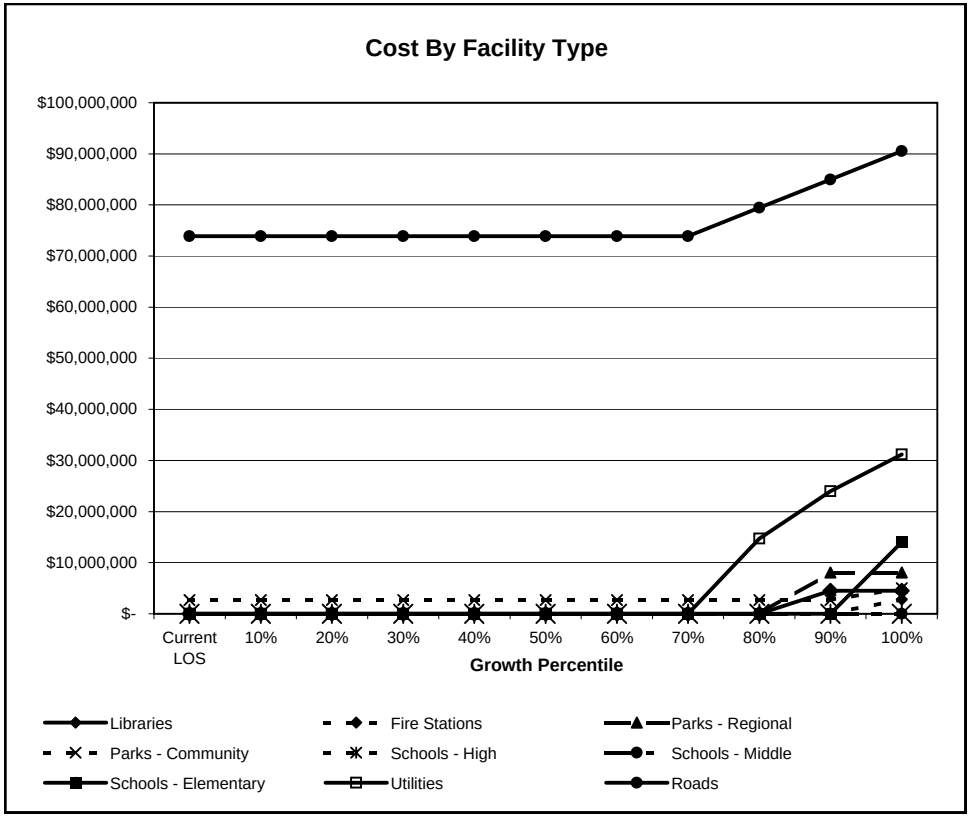
Table C-5f

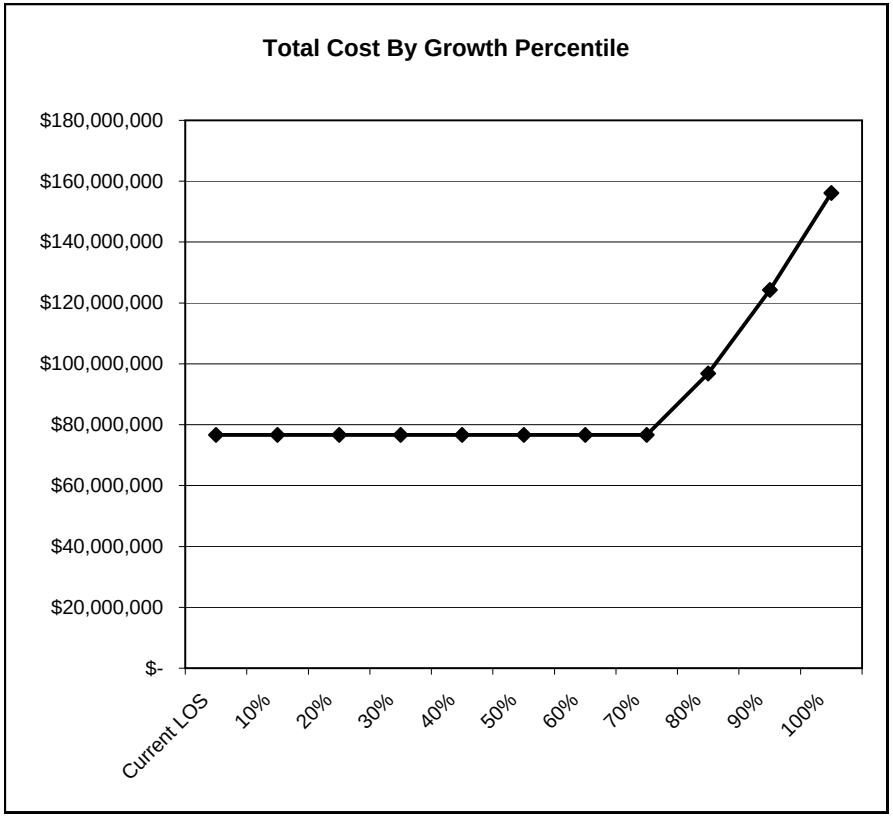
Percentile Costs By Study Area

Area 6

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -								$ -	$ 4,500,000	$ -	$ 4,500,000
Libraries	$ -								$ -	$ -	$ 2,802,300	$ 2,802,300
Parks - Regional	$ -								$ -	$ 8,073,300	$ -	$ 8,073,300
Parks - Community	$ 2,715,500								$ -	$ -	$ 2,297,800	$ 5,013,300
Schools - High	$ -								$ -	$ -	$ -	$ -
Schools - Middle	$ -								$ -	$ -	$ -	$ -
Schools - Elementary	$ -								$ -	$ -	$ 14,000,000	$ 14,000,000
Utilities	$ -								$ 14,700,000	$ 9,300,000	$ 7,200,000	$ 31,200,000
Roads	$ 73,886,200								$ 5,547,200	$ 5,547,200	$ 5,547,200	$ 90,527,800
Total Cost	$ 76,601,700								$ 20,247,200	$ 27,420,500	$ 31,847,300	$ 156,116,700





Chesterfield County Planning Dept.

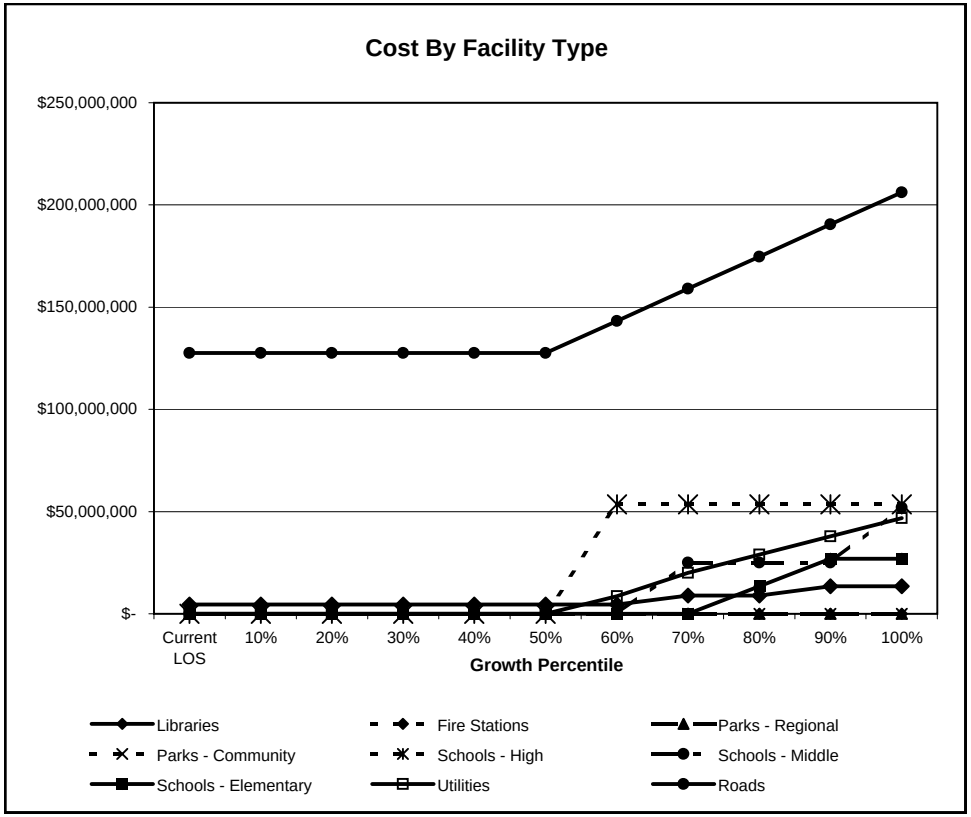
Table C-5g

Percentile Costs By Study Area

Area 7

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$4,500,000						$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 13,500,000
Libraries	$0						$ -	$ -	$ -	$ -	$ -	$ -
Parks - Regional	$ -						$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$0						$ -	$ -	$ -	$ -	$ -	$ -
Schools - High	$0						$ 53,500,000	$ -	$ -	$ -	$ -	$ 53,500,000
Schools - Middle	$0						$ -	$ 25,000,000	$ -	$ -	$ 27,000,000	$ 52,000,000
Schools - Elementary	$0						$ -	$ -	$ 13,500,000	$ 13,500,000	$ -	$ 27,000,000
Utilities	$ -						$ 8,600,000	$ 11,500,000	$ 8,900,000	$ 8,900,000	$ 8,900,000	$ 46,800,000
Roads	$127,594,500						$ 15,721,000	$ 15,721,000	$ 15,721,000	$ 15,721,000	$ 15,721,000	$ 206,199,500
Total Cost	$ 132,094,500						$ 77,821,000	$ 56,721,000	$ 38,121,000	$ 42,621,000	$ 51,621,000	$ 398,999,500



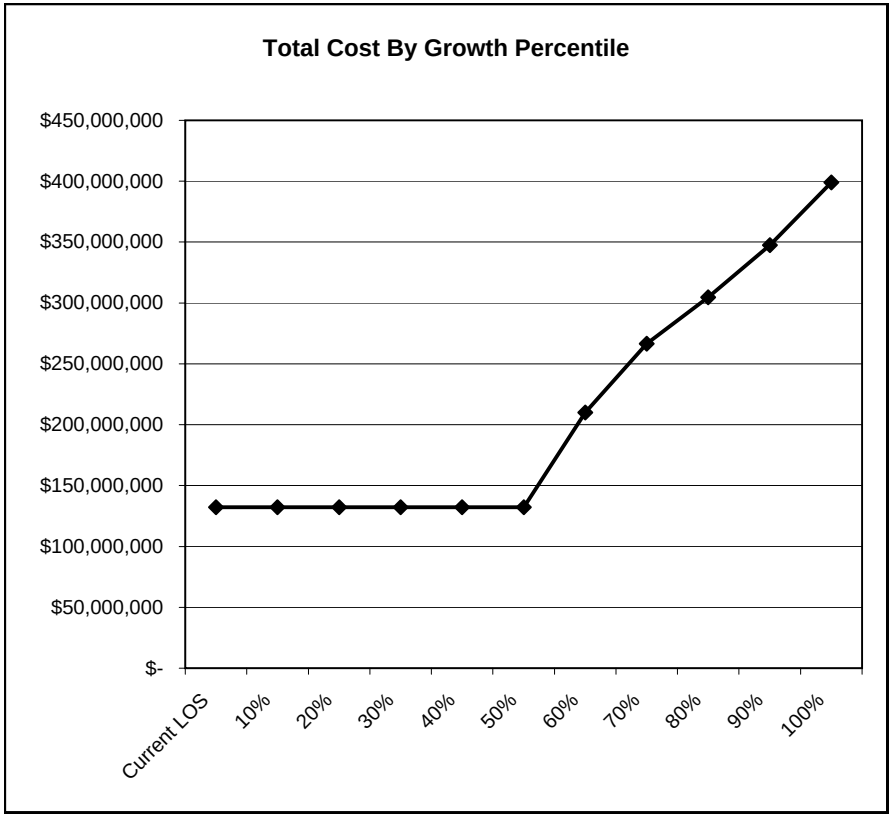


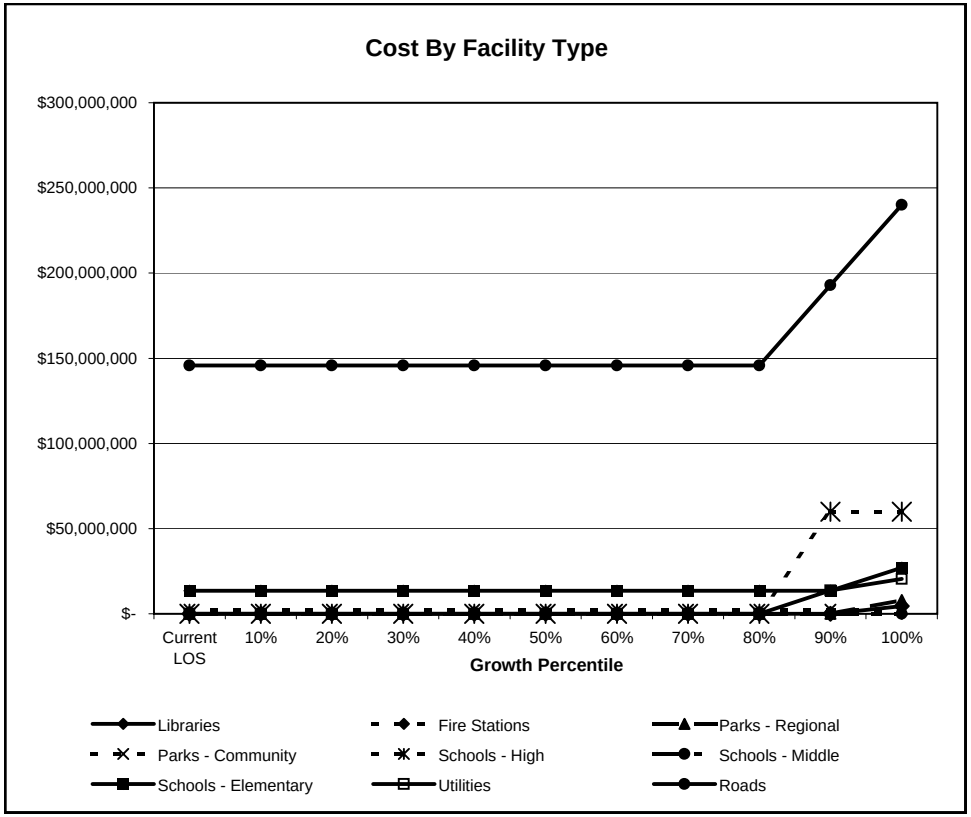
Table C5h

Percentile Costs By Study Area

Area 8

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -									$ -	$ 4,500,000	$ 4,500,000
Libraries	$ -									$ -	$ -	$ -
Parks - Regional	$ -									$ -	$ 8,073,300	$ 8,073,300
Parks - Community	$ 2,437,000									$ -	$ -	$ 2,437,000
Schools - High	$ -									$ 60,000,000	$ -	$ 60,000,000
Schools - Middle	$ -									$ -	$ -	$ -
Schools - Elementary	$ 13,500,000									$ -	$ 13,500,000	$ 27,000,000
Utilities	$ -									$ 13,800,000	$ 6,700,000	$ 20,500,000
Roads	$ 145,720,100									$ 47,217,300	$ 47,217,300	$ 240,154,700
Total Cost	$ 161,657,100									$ 121,017,300	$ 79,990,600	$ 362,665,000



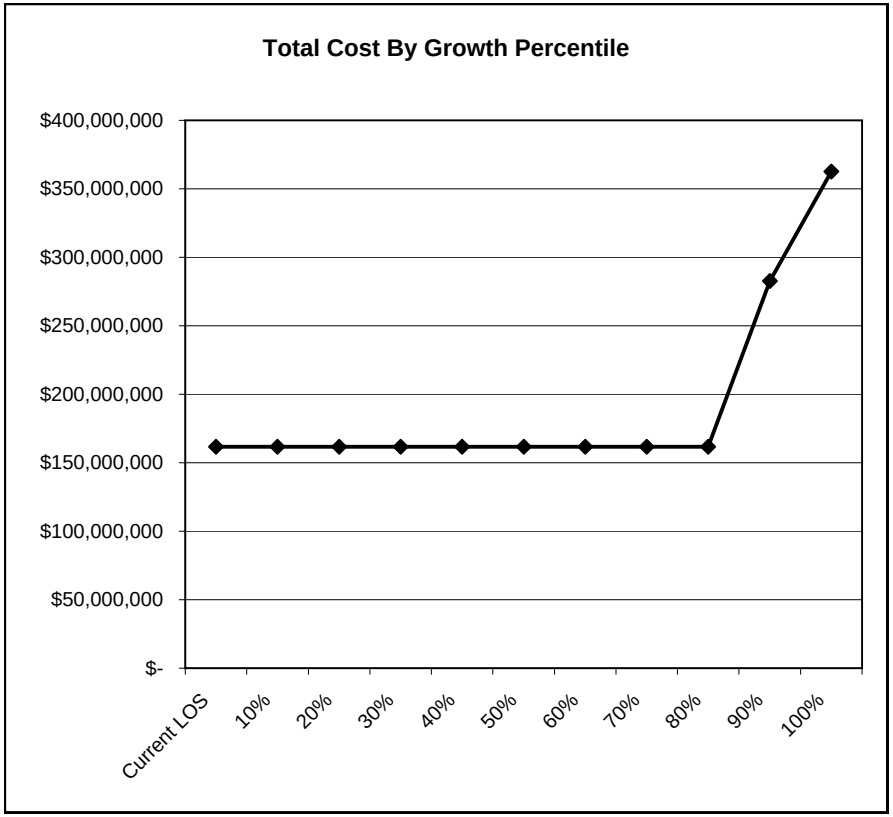
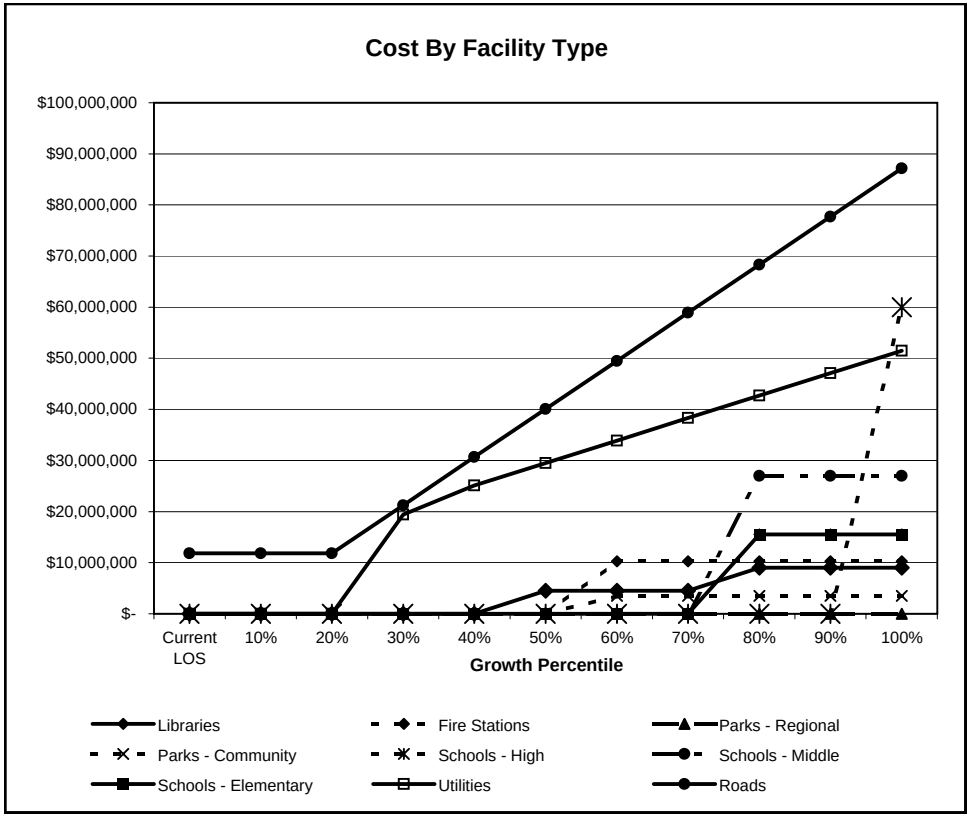


Table C-5i
Percentile Costs By Study Area

Area 9

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -			$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ -	$ 9,000,000
Libraries	$ -			$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ -	$ -	$ 10,252,400
Parks - Regional	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -			$ -	$ -	$ -	$ 3,481,500	$ -	$ -	$ -	$ -	$ 3,481,500
Schools - High	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ 60,000,000
Schools - Middle	$ -			$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ -	$ -	$ 27,000,000
Schools - Elementary	$ -			$ -	$ -	$ -	$ -	$ -	$ 15,500,000	$ -	$ -	$ 15,500,000
Utilities	$ -			$ 19,400,000	$ 5,700,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 4,400,000	$ 51,500,000
Roads	$ 11,830,400			$ 9,413,500	$ 9,413,500	$ 9,413,500	$ 9,413,500	$ 9,413,500	$ 9,413,500	$ 9,413,500	$ 9,413,500	$ 87,138,400
Total Cost	$ 11,830,400			$ 28,813,500	$ 15,113,500	$ 18,313,500	$ 27,547,400	$ 13,813,500	$ 60,813,500	$ 13,813,500	$ 73,813,500	$ 263,872,300



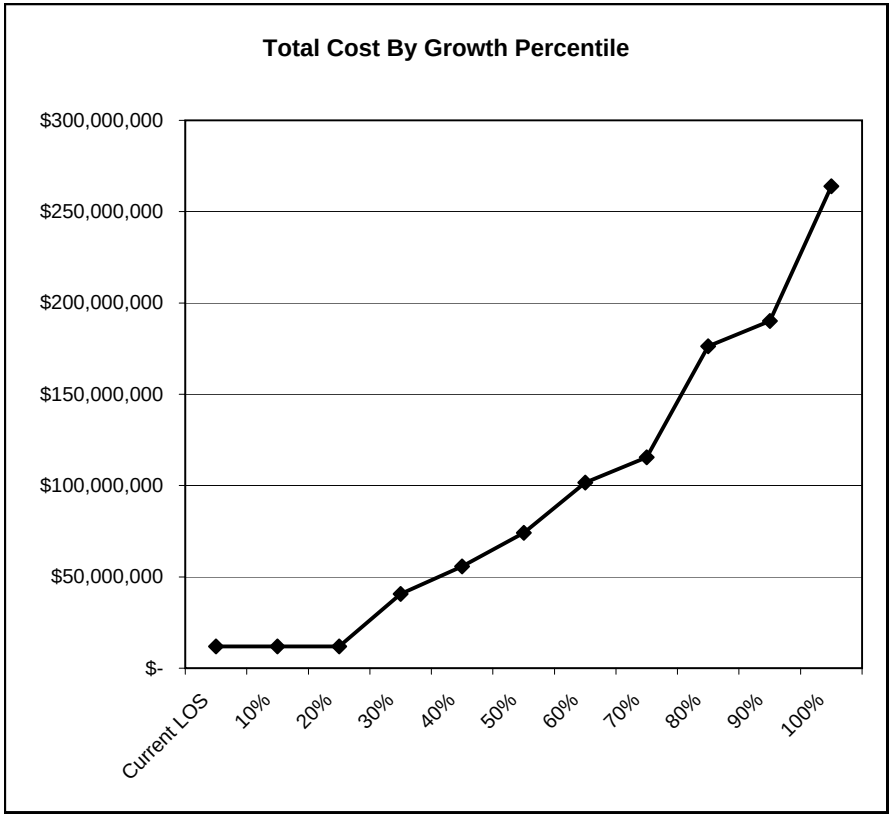


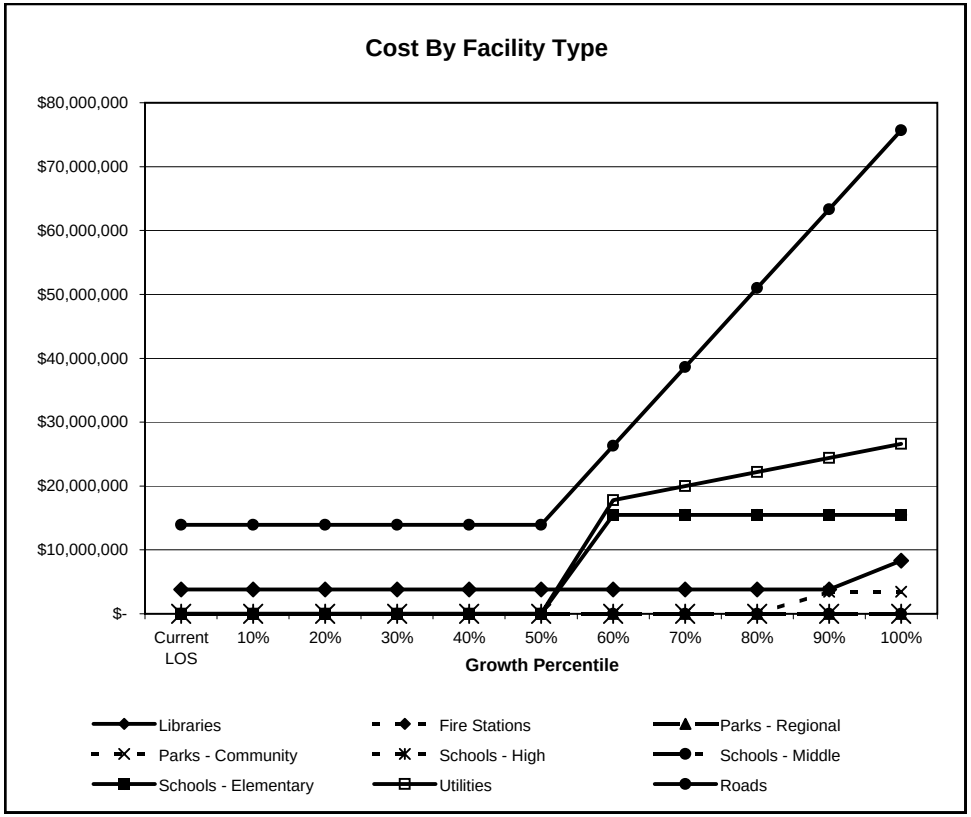
Table C-5j

Percentile Costs By Study Area

Area 10

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$3,800,000						$ -	$ -	$ -	$ -	$ 4,500,000	$ 8,300,000
Libraries	$0						$ -	$ -	$ -	$ -	$ -	$ -
Parks - Regional	-						$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$0						$ -	$ -	$ -	$ 3,481,500	$ -	$ 3,481,500
Schools - High	$0						$ -	$ -	$ -	$ -	$ -	$ -
Schools - Middle	$0						$ -	$ -	$ -	$ -	$ -	$ -
Schools - Elementary	$0						$ 15,500,000	$ -	$ -	$ -	$ -	$ 15,500,000
Utilities	-						$ 17,800,000	$ 2,200,000	$ 2,200,000	$ 2,200,000	$ 2,200,000	$ 26,600,000
Roads	$13,942,800						$ 12,348,800	$ 12,348,800	$ 12,348,800	$ 12,348,800	$ 12,348,800	$ 75,686,800
Total Cost	17,742,800						$ 45,648,800	$ 14,548,800	$ 14,548,800	$ 18,030,300	$ 19,048,800	$ 129,568,300



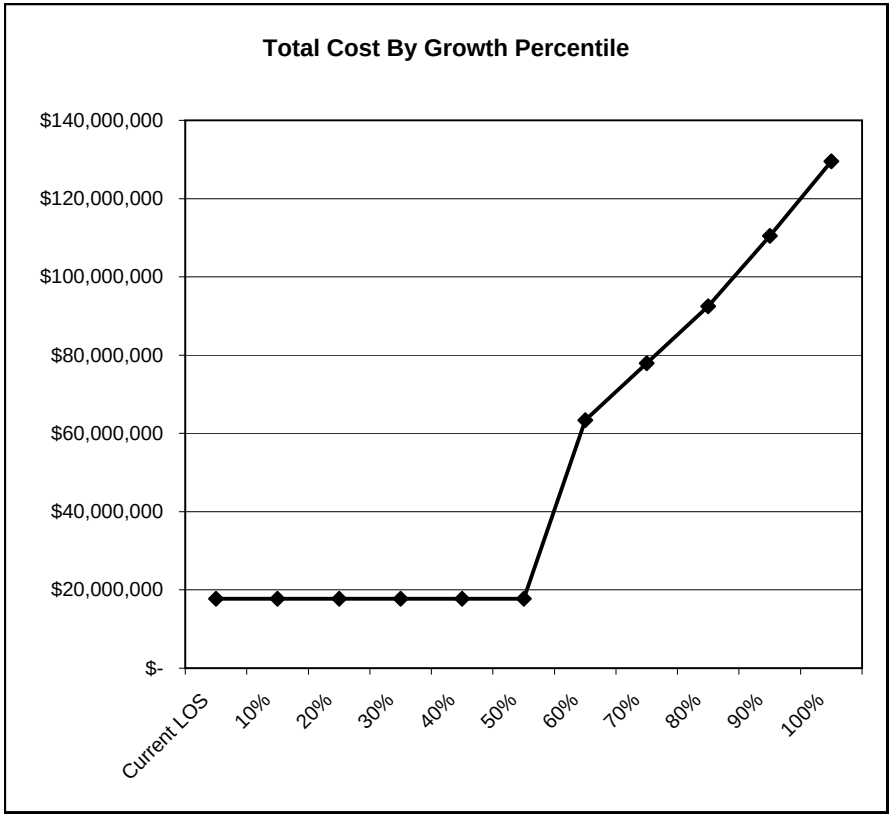
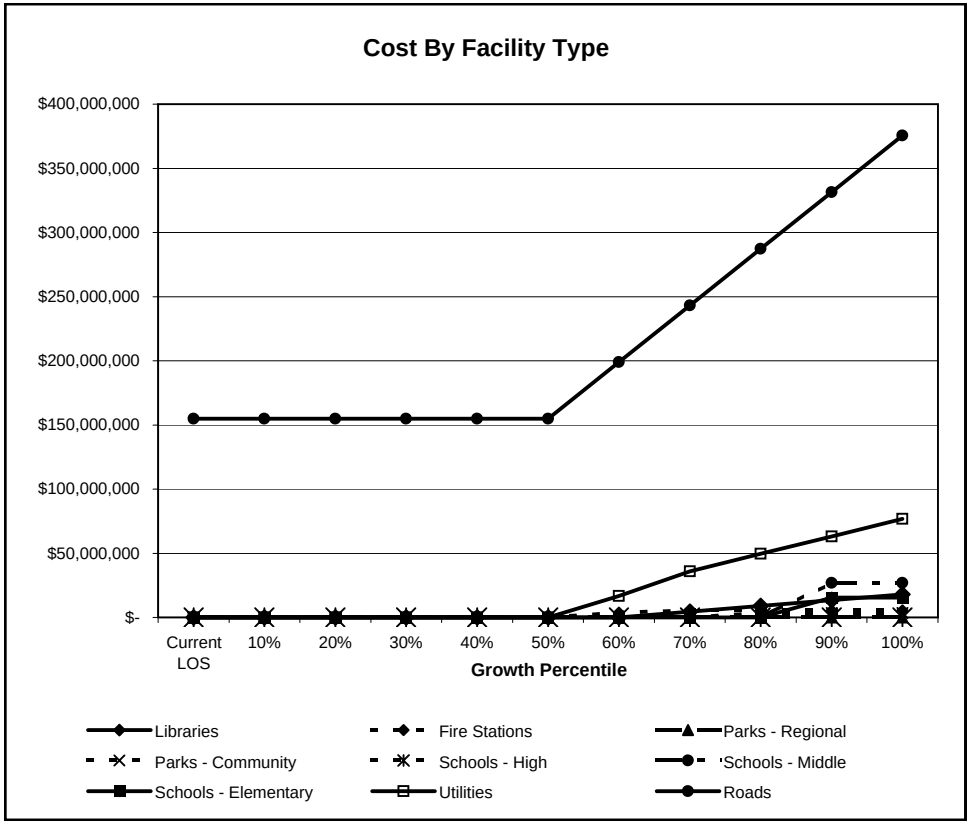


Table C-5k
Percentile Costs By Study Area

Area 11

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -						$ -	$ 4,500,000	$ 4,500,000	$ 4,500,000	$ 4,500,000	$ 18,000,000
Libraries	$ -						$ 3,705,300	$ 1,689,800	$ -	$ -	$ -	$ 5,395,100
Parks - Regional	$ -						$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -						$ -	$ -	$ 3,481,500	$ -	$ -	$ 3,481,500
Schools - High	$ -						$ -	$ -	$ -	$ -	$ -	$ -
Schools - Middle	$ -						$ -	$ -	$ -	$ 27,000,000	$ -	$ 27,000,000
Schools - Elementary	$ -						$ -	$ -	$ -	$ 15,500,000	$ -	$ 15,500,000
Utilities	$ -						$ 16,600,000	$ 19,400,000	$ 13,600,000	$ 13,600,000	$ 13,600,000	$ 76,800,000
Roads	$ 154,811,300						$ 44,144,400	$ 44,144,400	$ 44,144,400	$ 44,144,400	$ 44,144,400	$ 375,533,300
Total Cost	$ 154,811,300						$ 64,449,700	$ 69,734,200	$ 65,725,900	$ 104,744,400	$ 62,244,400	$ 521,709,900



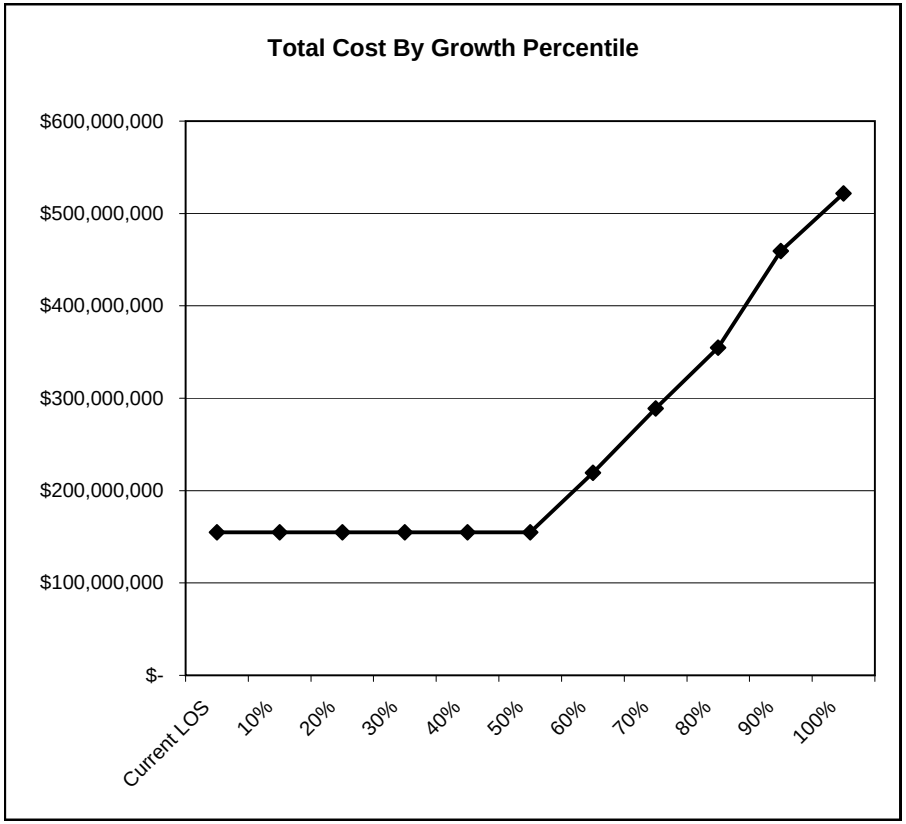


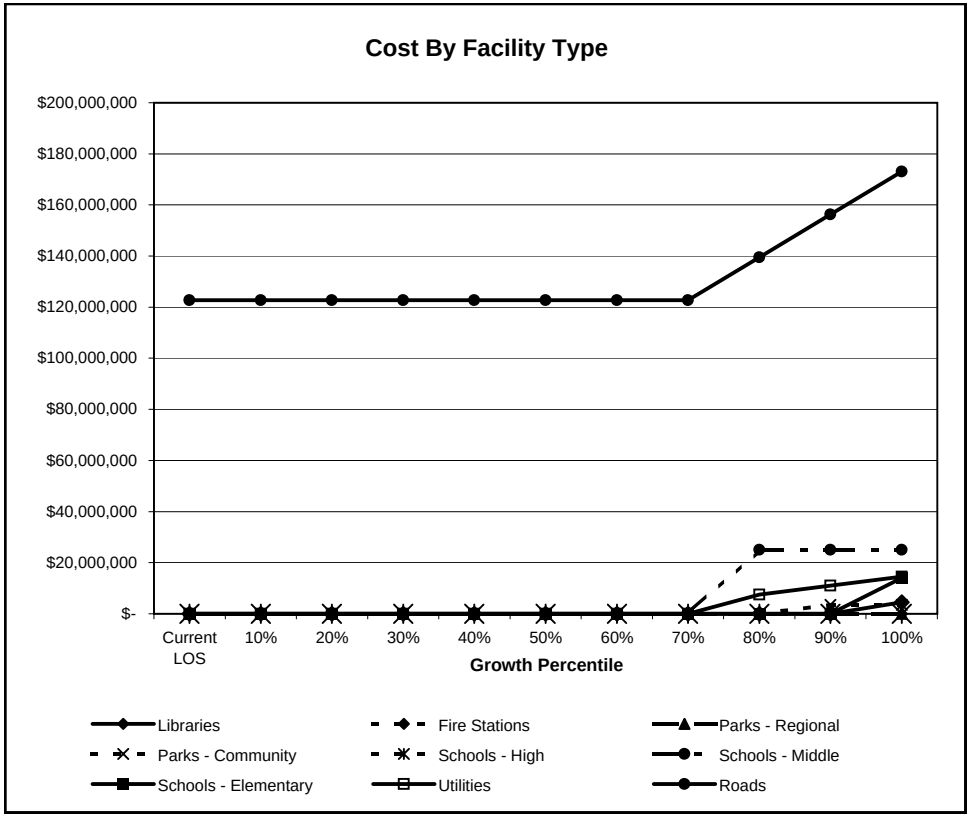
Table C-5l

Percentile Costs By Study Area

Area 12

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -								$ -	$ -	$ 4,500,000	$ 4,500,000
Libraries	$ -								$ -	$ -	$ -	$ -
Parks - Regional	$ -								$ -	$ -	$ -	$ -
Parks - Community	$ -								$ -	$ 3,481,500	$ -	$ 3,481,500
Schools - High	$ -								$ -	$ -	$ -	$ -
Schools - Middle	$ -								$ 25,000,000	$ -	$ -	$ 25,000,000
Schools - Elementary	$ -								$ -	$ -	$ 14,000,000	$ 14,000,000
Utilities	$ -								$ 7,500,000	$ 3,500,000	$ 3,500,000	$ 14,500,000
Roads	$ 122,731,700								$ 16,775,200	$ 16,775,200	$ 16,775,200	$ 173,057,300
Total Cost	$ 122,731,700								$ 49,275,200	$ 23,756,700	$ 38,775,200	$ 234,538,800



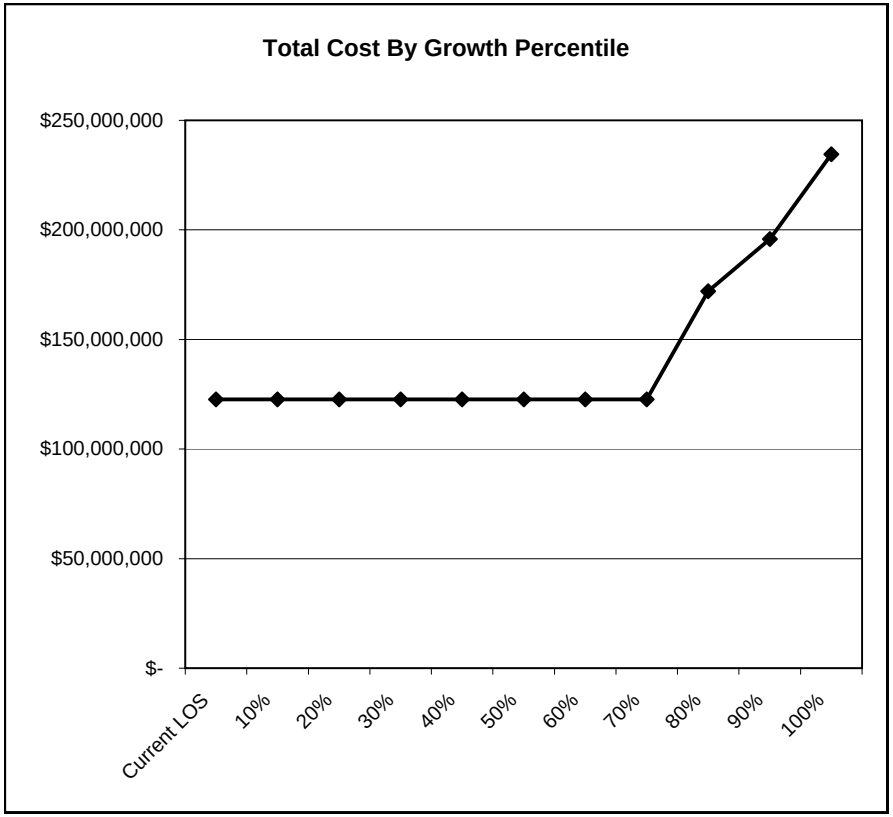


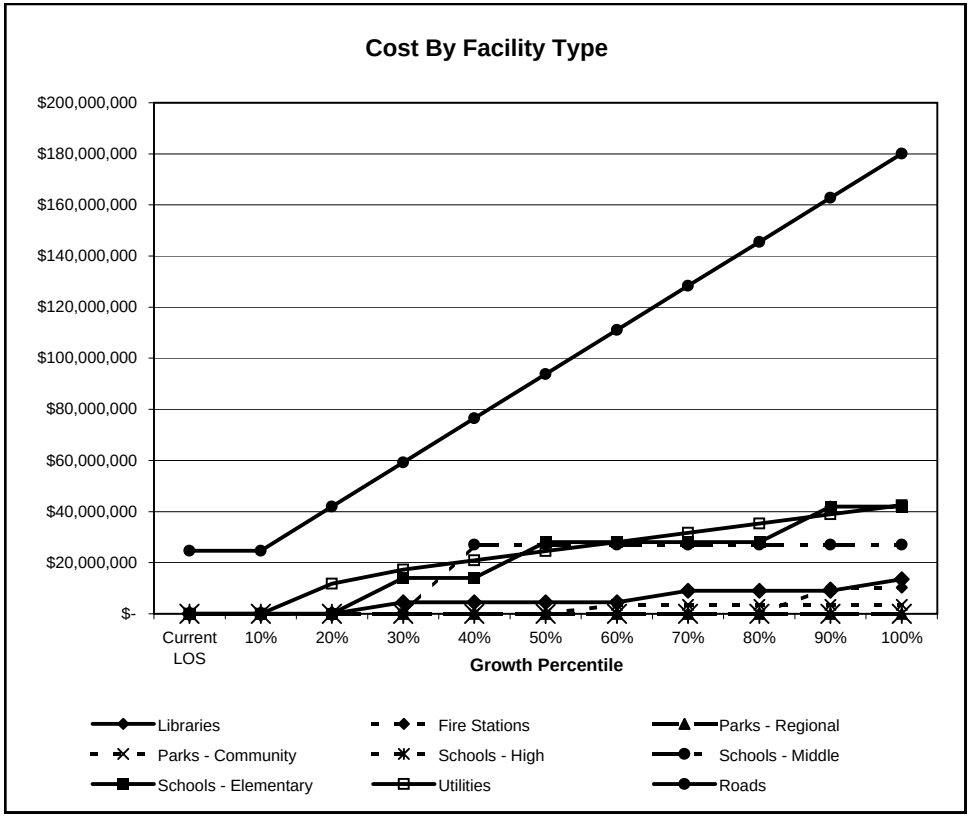
Table C-5m

Percentile Costs By Study Area

Area 13

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -		$ -	$ 4,500,000	$ -	$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ 13,500,000
Libraries	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,252,400	$ -	$ 10,252,400
Parks - Regional	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -		$ -	$ -	$ -	$ -	$ 3,481,500	$ -	$ -	$ -	$ -	$ 3,481,500
Schools - High	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Middle	$ -		$ -	$ -	$ 27,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,000,000
Schools - Elementary	$ -		$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ -	$ 14,000,000	$ -	$ 42,000,000
Utilities	$ -		$ 11,800,000	$ 5,500,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 3,600,000	$ 42,500,000
Roads	$ 24,679,100		$ 17,271,900	$ 17,271,900	$ 17,271,900	$ 17,271,900	$ 17,271,900	$ 17,271,900	$ 17,271,900	$ 17,271,900	$ 17,271,900	$ 180,126,200
Total Cost	$ 24,679,100		29,071,900	$ 41,271,900	$ 47,871,900	$ 34,871,900	$ 24,353,400	$ 25,371,900	$ 20,871,900	$ 45,124,300	$ 25,371,900	$ 318,860,100



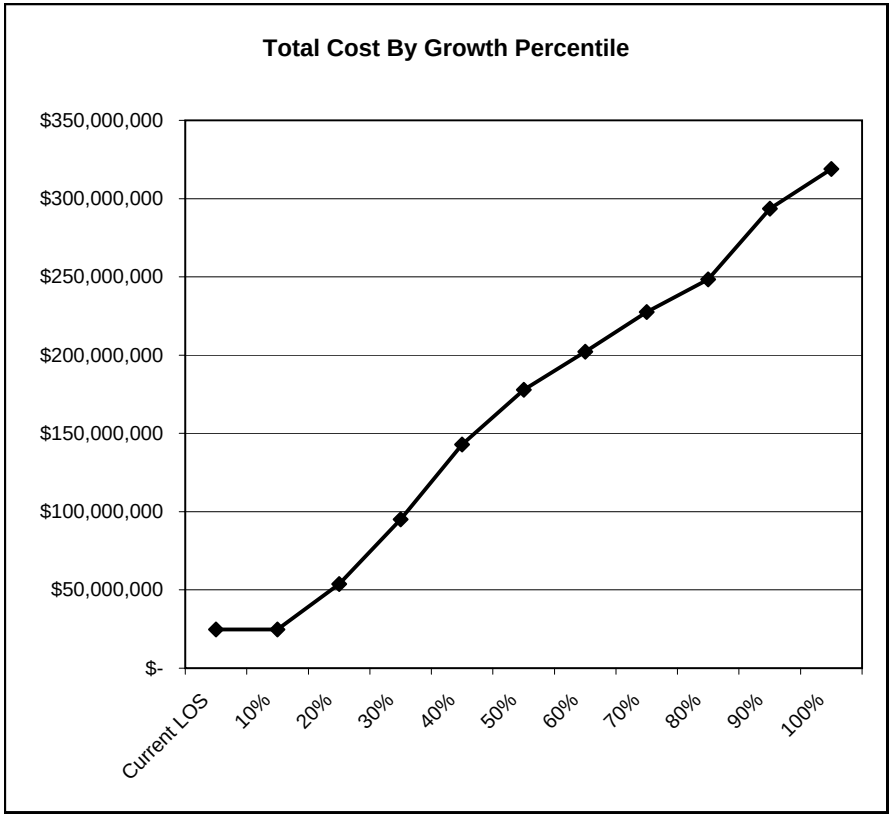


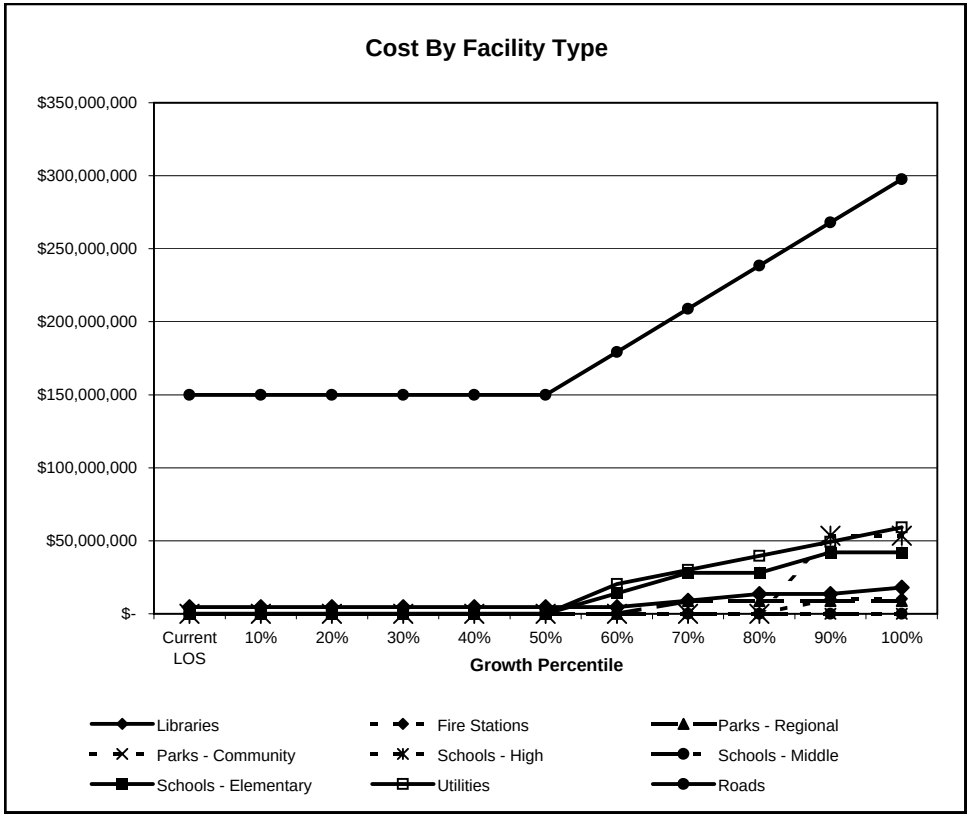
Table C-5n

Percentile Costs By Study Area

Area 14

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ 4,500,000						$ -	$ 4,500,000	$ 4,500,000	$ -	$ 4,500,000	$ 18,000,000
Libraries	$ -						$ -	$ -	$ -	$ 10,252,400	$ -	$ 10,252,400
Parks - Regional	$ -						$ -	$ 8,818,600	$ -	$ -	$ -	$ 8,818,600
Parks - Community	$ -						$ -	$ -	$ -	$ -	$ -	$ -
Schools - High	$ -						$ -	$ -	$ -	$ 53,500,000	$ -	$ 53,500,000
Schools - Middle	$ -						$ -	$ -	$ -	$ -	$ -	$ -
Schools - Elementary	$ -						$ 14,000,000	$ 14,000,000	$ -	$ 14,000,000	$ -	$ 42,000,000
Utilities	$ -						$ 20,300,000	$ 9,700,000	$ 9,700,000	$ 9,700,000	$ 9,700,000	$ 59,100,000
Roads	$ 149,798,600						$ 29,548,700	$ 29,548,700	$ 29,548,700	$ 29,548,700	$ 29,548,700	$ 297,542,100
Total Cost	$ 154,298,600						$ 63,848,700	$ 66,567,300	$ 43,748,700	$ 117,001,100	$ 43,748,700	$ 489,213,100



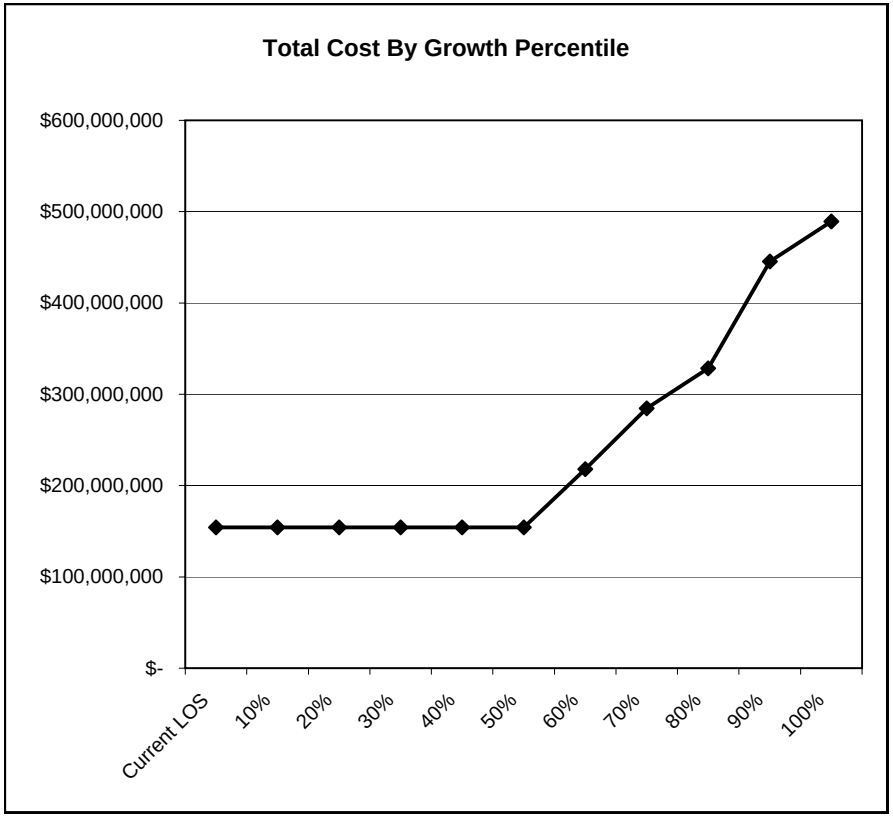
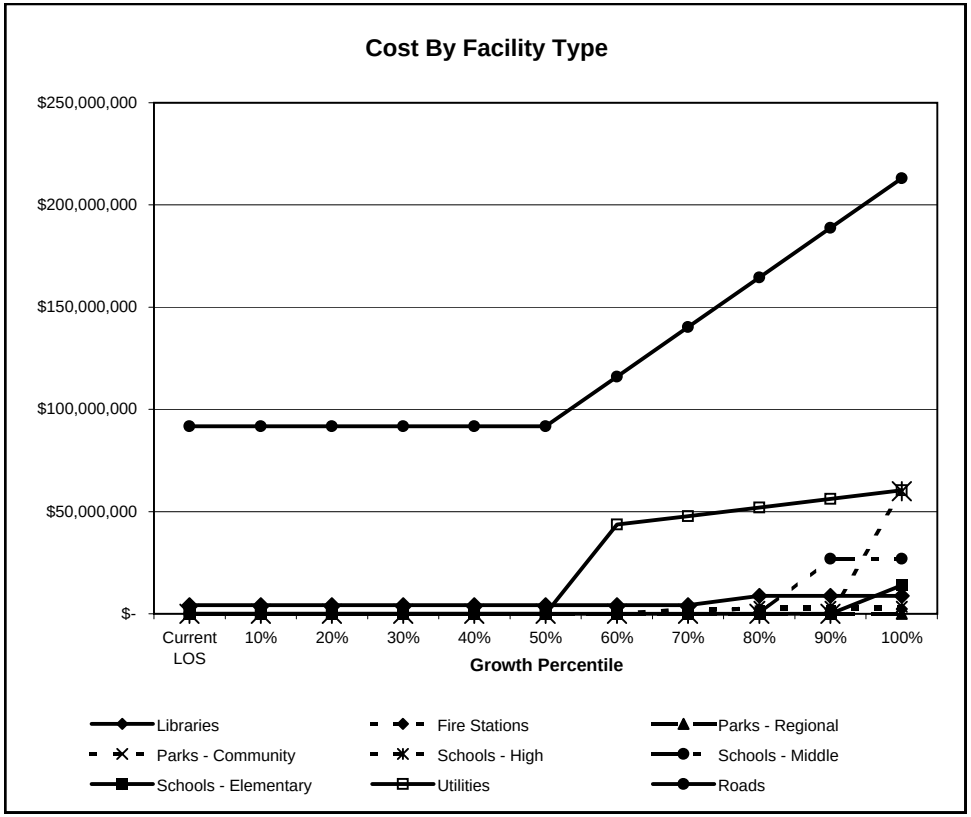


Table C-5o
Percentile Costs By Study Area

Area 15

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ 4,300,000						$ -	$ -	$ 4,500,000	$ -	$ -	$ 8,800,000
Libraries	$ -						$ -	$ 2,385,400	$ -	$ -	$ -	$ 2,385,400
Parks - Regional	$ -						$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -						$ -	$ -	$ 3,481,500	$ -	$ -	$ 3,481,500
Schools - High	$ -						$ -	$ -	$ -	$ -	$ 60,000,000	$ 60,000,000
Schools - Middle	$ -						$ -	$ -	$ -	$ 27,000,000	$ -	$ 27,000,000
Schools - Elementary	$ -						$ -	$ -	$ -	$ -	$ 14,000,000	$ 14,000,000
Utilities	$ -						$ 43,600,000	$ 4,200,000	$ 4,200,000	$ 4,200,000	$ 4,200,000	$ 60,400,000
Roads	$ 91,798,600						$ 24,260,800	$ 24,260,800	$ 24,260,800	$ 24,260,800	$ 24,260,800	$ 213,102,600
Total Cost	$ 96,098,600						$ 67,860,800	$ 30,846,200	$ 36,442,300	$ 55,460,800	$ 102,460,800	$ 389,169,500



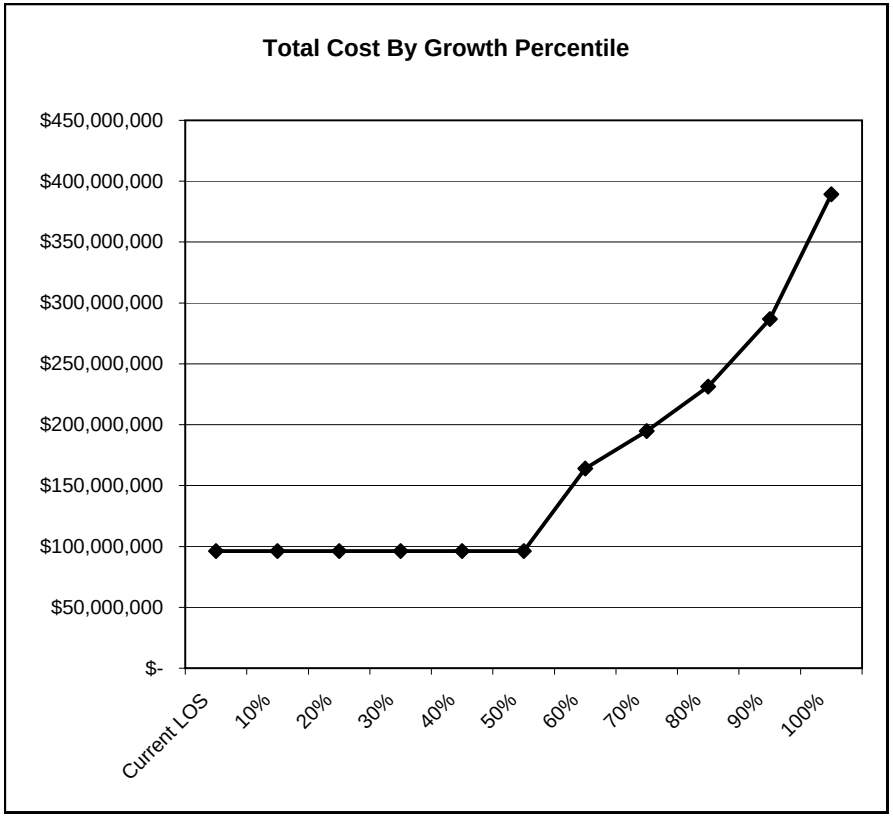


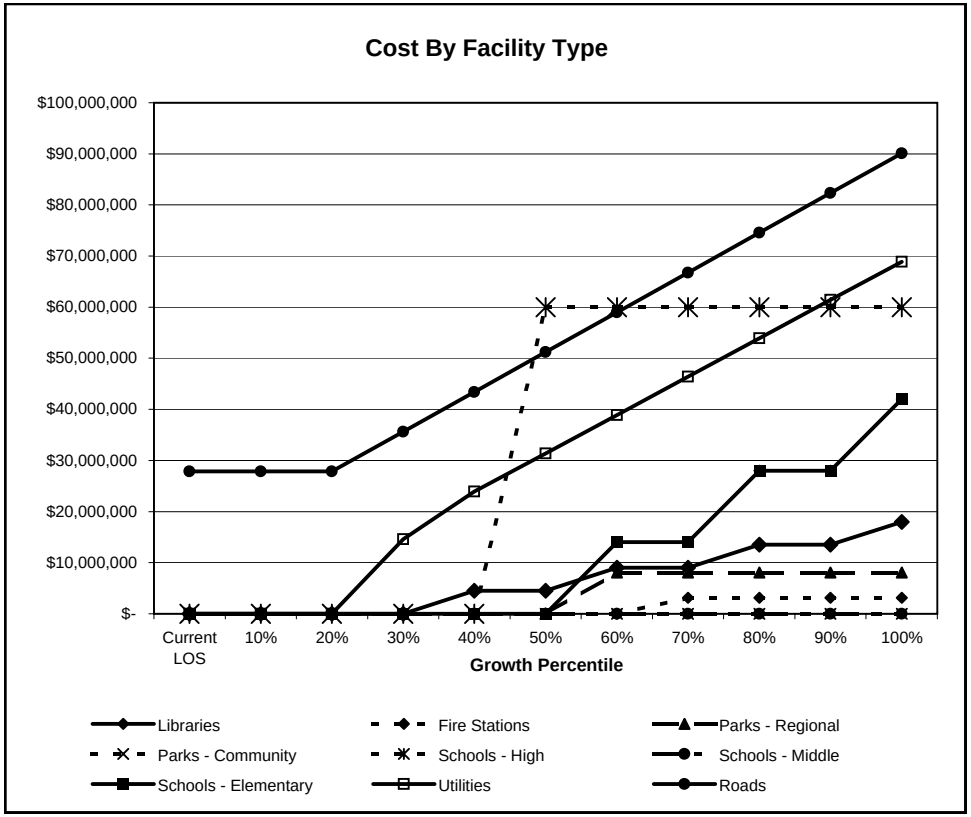
Table C-5p

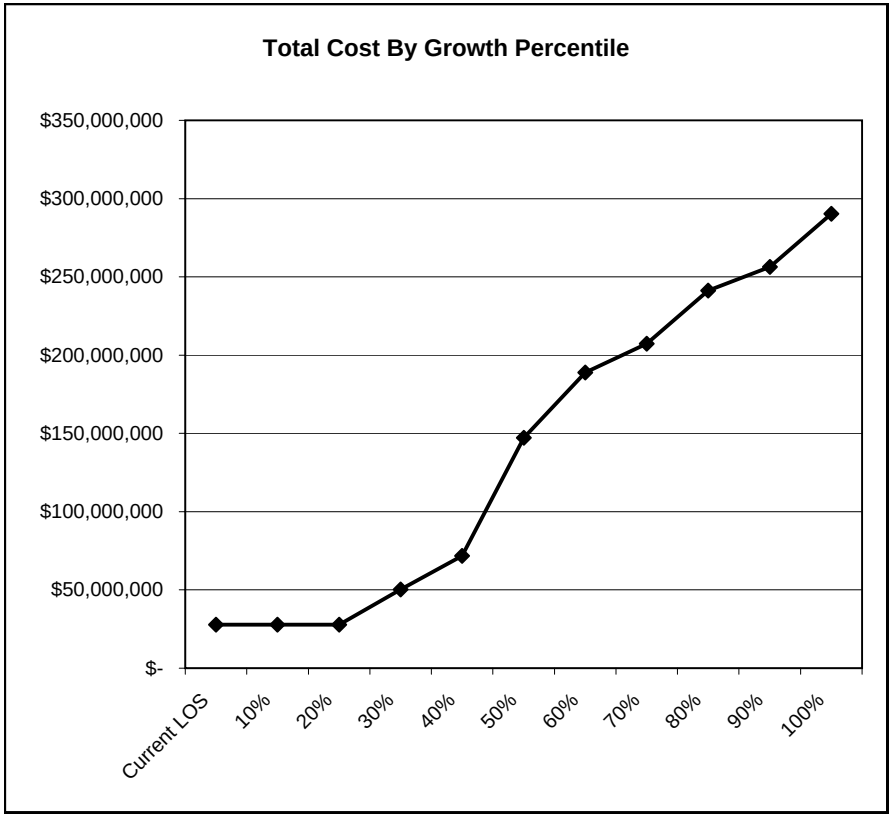
Percentile Costs By Study Area

Area 16

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -			$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ -	$ 4,500,000	$ 18,000,000
Libraries	$ -			$ -	$ -	$ -	$ -	$ 3,157,800	$ -	$ -	$ -	$ 3,157,800
Parks - Regional	$ -			$ -	$ -	$ -	$ 8,073,300	$ -	$ -	$ -	$ -	$ 8,073,300
Parks - Community	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - High	$ -			$ -	$ -	$ 60,000,000	$ -	$ -	$ -	$ -	$ -	$ 60,000,000
Schools - Middle	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Elementary	$ -			$ -	$ -	$ -	$ 14,000,000	$ -	$ 14,000,000	$ -	$ 14,000,000	$ 42,000,000
Utilities	$ -			$ 14,600,000	$ 9,300,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 7,500,000	$ 68,900,000
Roads	$ 27,848,300			$ 7,783,300	$ 7,783,300	$ 7,783,300	$ 7,783,300	$ 7,783,300	$ 7,783,300	$ 7,783,300	$ 7,783,300	$ 90,114,700
Total Cost	$ 27,848,300			$ 22,383,300	$ 21,583,300	$ 75,283,300	$ 41,856,600	$ 18,441,100	$ 33,783,300	$ 15,283,300	$ 33,783,300	$ 290,245,800





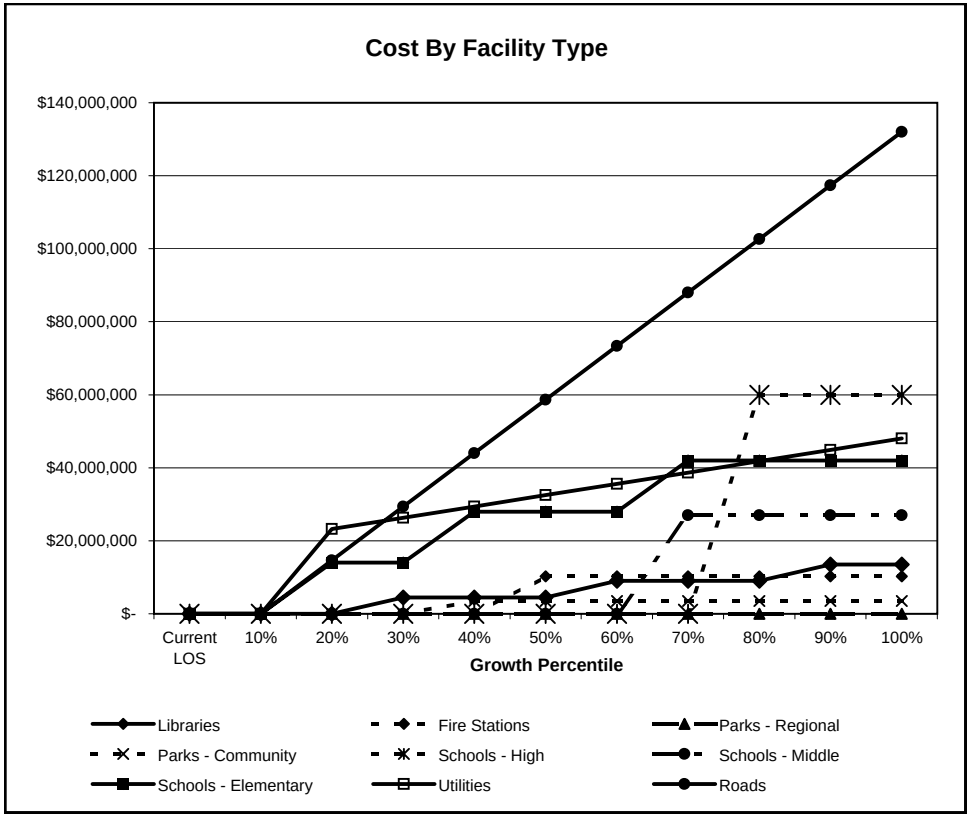
TableC-5q

Percentile Costs By Study Area

Area 17

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -		$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ -	$ 4,500,000	$ -	$ 13,500,000
Libraries	$ -		$ -	$ -	$ -	$ 10,252,400	$ -	$ -	$ -	$ -	$ -	$ 10,252,400
Parks - Regional	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -		$ -	$ -	$ 3,481,500	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,481,500
Schools - High	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000,000	$ -	$ -	$ 60,000,000
Schools - Middle	$ -		$ -	$ -	$ -	$ -	$ -	$ 27,000,000	$ -	$ -	$ -	$ 27,000,000
Schools - Elementary	$ -		$ 14,000,000	$ -	$ 14,000,000	$ -	$ -	$ 14,000,000	$ -	$ -	$ -	$ 42,000,000
Utilities	$ -		$ 23,200,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 3,100,000	$ 48,000,000
Roads	$ -		$ 14,668,400	$ 14,668,400	$ 14,668,400	$ 14,668,400	$ 14,668,400	$ 14,668,400	$ 14,668,400	$ 14,668,400	$ 14,668,400	$ 132,015,600
Total Cost	$ -		51,868,400	$ 22,268,400	$ 35,249,900	$ 28,020,800	$ 22,268,400	$ 58,768,400	$ 77,768,400	$ 22,268,400	$ 17,768,400	$ 336,249,500



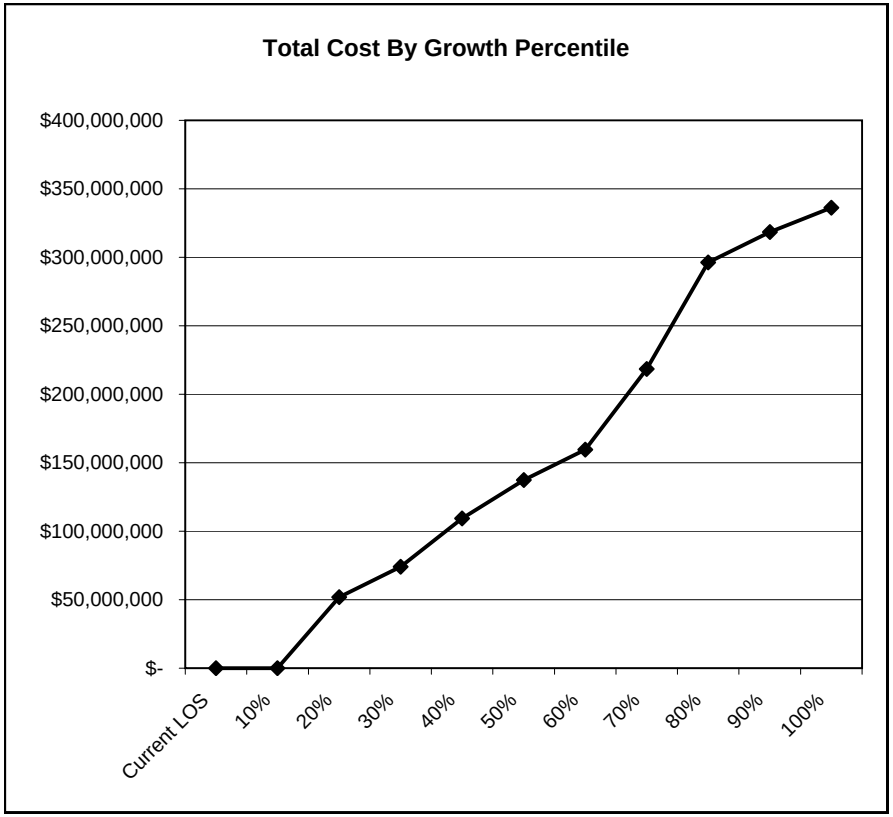


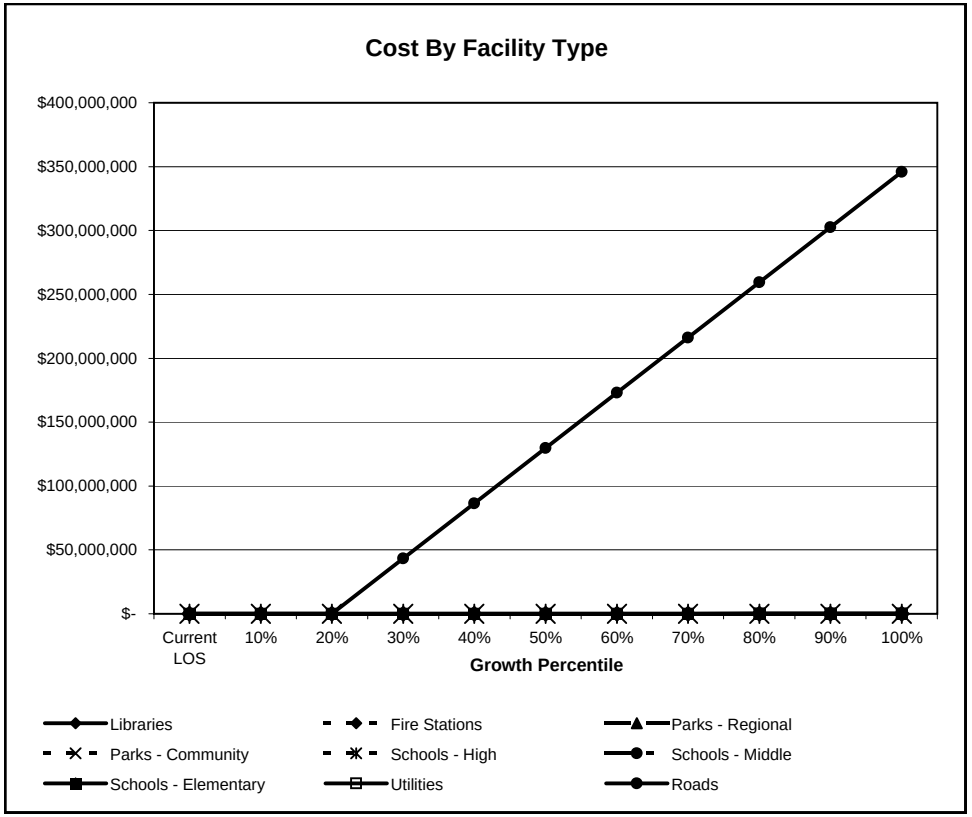
Table C-5r

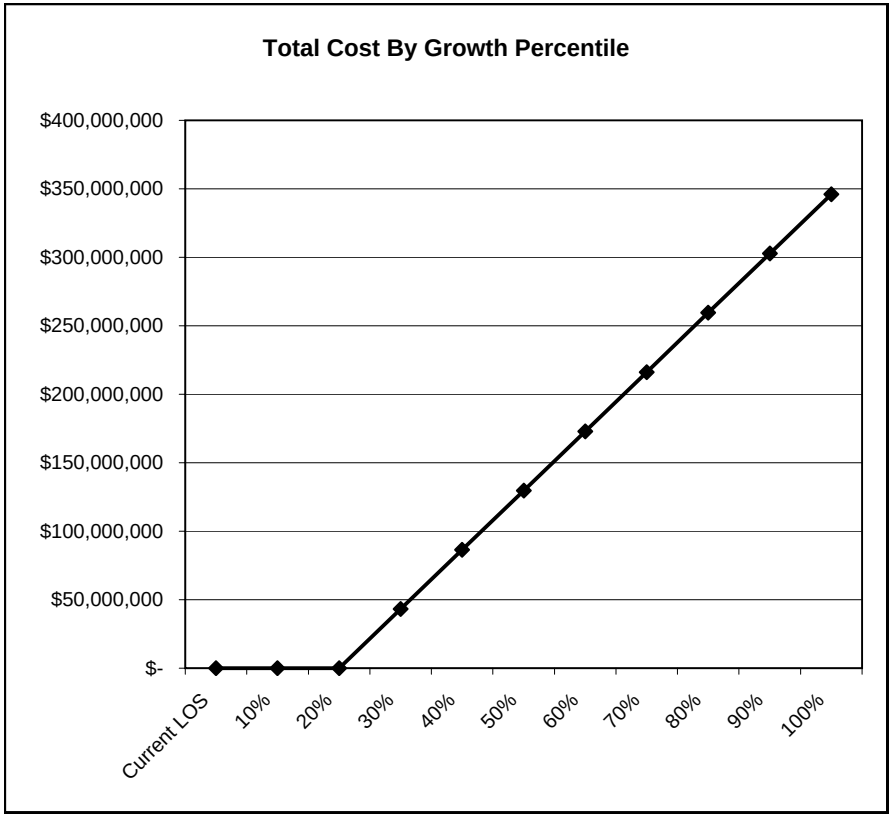
Percentile Costs By Study Area

Area 18

Projected Total Facility Costs At Each Growth Percentile

Facility	Cost to Reach Current Level of Service	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Total Projected Cost
Fire Stations	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Libraries	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Regional	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks - Community	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - High	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Middle	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Schools - Elementary	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Utilities	$ -			$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000
Roads	$ -			$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 345,899,200
Total Cost	$ -			$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,237,400	$ 43,437,400	$ 43,237,400	$ 43,237,400	$ 346,099,200





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Appendix D – Detailed Methodologies

D-1: Development Potential Database Methodology

D-2: Growth Phasing Model Methodology

a. Facilities

(1) Fire Stations
(2) Libraries
(3) Parks
(4) Schools
(5) Roads
(6) Utilities

b. Population Projections

Appendix D-1

Chesterfield County Development Potential Database (DPD) Methodology and Major Assumptions

Version: Lumod01 (As of December 31, 2001)

Methodology Summary

The purpose of the Chesterfield County Development Potential Database (DPD) is to generate a residential or commercial "build out" growth potential factor for the 106,000+ parcels of land in Chesterfield County, based on parcel boundaries, existing land uses, zoning and land use plan recommendations in place as of December 31, 2001. This was done by assuming existing land uses would remain constant, zoned vacant land would be developed according to its designated zoning, and unzoned land (i.e. Agriculturally zoned land) would be developed according to the recommendations of the County's comprehensive plan. The result, using Geographic Information System (GIS) technology, is a residential or commercial development potential assigned to each Chesterfield County parcel that existed on the cut-off date, December 31, 2001. Attachment A shows an example of sample database fields. This database was used as the foundation for subsequent facilities and service cost modeling as part of the county's Growth Phasing Analysis project. See Attachment D-1a for example database fields.

What This Database Should and Should Not Be Used For

The DPD was established for countywide and large sub-area analysis. Because of the general assumptions used, the DPD should not be used for small area analysis (i.e. less than 50 parcels) or individualized parcel reference.

Major Components

The Development Potential Database is built on three major sources of information:

- **Existing Land Use** – This field is taken from the Planning Department's existing land use database, and reflects existing land uses as of 12/31/01. Existing land uses are broken down into ten categories. (See key in Attachment D-1b)
- **Zoning** – This field is taken from the Planning Department's zoning coverage in GIS, and reflects zoning as of 12/31/01. See key for individual zoning classifications. (See key in Attachment D-1b)
- **Land Use Plan** - This field is taken from the Planning Department's land use plan coverage in GIS, and reflects land use plan recommendations as of 12/31/01. See key for individual land use plan classifications. (See key in Attachment D-1c)

Major Assumptions

For the purpose of this analysis, the following major assumptions are made. This is not to say that development will take place in the ascribed manner; only that some generalized assumptions had to be made when producing a countywide model based on major trends.

- The **development potential** for all parcels can be one of three things:
  1) Parcels with identified **commercial** potential are assigned a building square footage based on existing average commercial square footage calculation for existing zoning classifications (See Attachment D-1d).
  2) Parcels with identified **residential** potential are assigned a count of potential dwellings based either on what currently exists, or if the parcel is vacant or underutilized, the potential number of units that could be developed on the parcel.

3) Parcels with **no identified development potential** because of their current use (schools, churches, parks, etc.) are assigned no development potential value.

- The development potential of **all existing developed land uses**, such as houses and commercial buildings, remains as is (as of December 31, 2001), unless that use is identified as underutilized.
- Some parcels with existing residential or commercial uses are identified as **underutilized** (i.e. a 100 acre parcel zoned R-12 currently with one single family house.). Underutilized parcels are assigned a development potential (see steps below).
- All vacant agriculturally zoned parcels in the Land Use Plan's **Rural Conservation Area** are assigned a development potential of zero.
- The **environmental and other developmental constraints** associated with each parcel are not individually evaluated as part of this analysis. However, environmental and developmental constraints are reflected in the development density factors used to calculate growth potential.

Base Date: All "current" data set to December 31, 2001. Due to the complexity of the database, it cannot be updated "on the fly" as new development proposals are approved. Staff intends to update the database annually, with data as of December 31st of each year.

The Steps for Projecting Residential and Commercial Development Potential – For each record.

The steps listed below show the method used to produce a residential or commercial development factor for each Chesterfield County parcel. The resulting database contains many miscellaneous fields, but the critical fields generated for this analysis as listed in Attachment D-1e. File codes in these steps are shown in parentheses.

Starting With **Existing Land Use** Field

1) If **Water, Utility or Public/Semi-Public** – Assign Residential Development Potential and Commercial Development Potential of zero for each record.
2) If **Single Family, Mobile Home or Multi-Family**
   a) If less than one unit on parcels of ten acres or less, assign Residential Development Potential (Res_poten) as indicated in 2001 Units field (2001units).
   b) Parcels containing one unit on ten or more acres are classified as underutilized. If there is one unit a parcel ten acre or more in size, determine if the parcel is zoned for residential development by checking the record's zoning classification (Zoning).
      i) For parcels ten acres or greater with residential zoning, assign Residential Development Potential (Res_poten) by multiplying the parcel size times the Development Factor (Dev_factor).
         (1) If the parcel has zoning conditions that assigns a maximum residential development density (i.e. not to exceed 200 units), use that maximum as the Residential Development Potential (Res_poten).
      ii) For parcels with commercial zoning, assign Commercial Development Potential (Com_poten) by multiplying the parcel size times the Development Factor (Dev_factor).
3) If **Commercial**, assign Commercial Development Potential (Com_poten) as indicated in the Square Feet (Sq_feet) field.
   a) For selected commercial parcels identified as underutilized, assign Commercial Development Potential (Com_poten) as determined by individual parcel review.
4) If **Vacant**
   a) For vacant parcels zoned for residential development (R, R-TH, R-MF and MH)
      i) If the size of the parcel is greater than the minimum zoning lot size requirement, assign Residential Development Potential (Res_poten) by multiplying the parcel size times the Development Factor (Dev_factor).

(1) If the parcel has zoning conditions that assigns a maximum residential development density (i.e. not to exceed 200 units), use that maximum as the Residential Development Potential (Res_poten).

ii) If the size of the parcel is less than the minimum zoning lot size requirement, assign Residential Development Potential (Res_poten) of zero.

(1) If the parcel has zoning conditions that assign a maximum commercial development density (i.e. not to exceed 50000 sq. ft.), use that maximum as the Commercial Development Potential (Com_poten).

b) For vacant parcels zoned for commercial development (O, C, I)

i) If the size of the parcel is greater than .5 acres, assign Commercial Development Potential (Com_poten) by multiplying the parcel size times the Development Factor (Dev_factor).

ii) If the size of the parcel is less than .5 acres, assign Commercial Development Potential (Com_poten) of zero.

c) For vacant parcels zoned Agricultural

i) If the Land Use Plan (Lup) for the parcel recommends residential development, and the size of the parcel is greater than the zoning classification corresponding to the Land Use Plan recommendation, assign Residential Development Potential (Res_poten) by multiplying the parcel size times the Development Factor (Dev_factor).

ii) If the Land Use Plan (Lup) for the parcel recommends commercial development, and the size of the parcel is greater than .5 acres, assign Commercial Development Potential (Com_poten) by multiplying the parcel size times the Development Factor (Dev_factor).

iii) All other parcels with Land Use Plan recommendations other than residential or commercial (including the Rural Conservation Area) are assigned a development potential of zero.

Notes:

- **Parcel Splits** - Some large vacant parcels have been further split to create sub-geographies based on zoning boundaries or areas defined by a zoning case. These sub-geographies were assigned a development potential based on the conditions of the zoning.
- **Underutilized Parcels** – Parcels containing single family dwellings were identified as underutilized if they were over ten acres in size and 1) they were zoned for residential use or 2) they were zoned for agricultural use and their land use plan designation recommended residential development. Selected commercial properties of ten acres or greater were identified as underutilized.
- **Multi-Family Development Potential In Commercial Zones** - While, under some circumstances, multi-family housing is permitted in commercial zones, no multi family housing was assigned in commercially zoned vacant or underutilized parcels unless identified as a condition of a zoning case.
- **Conditional Zoning** – A complete inventory of all zoning cases back to 1972 was undertaken as part of the development of this database. All cases with specified development restrictions (i.e. limits on the number of total units or commercial square footage permitted) were identified. These restrictions are listed in the Development Factor field.
- **Retail/Office/Industrial Development Potential** – At the request of the Chesterfield County Transportation Department, the Commercial Development Potential for vacant parcels either commercially zoned or recommended for commercial development by the County's Land Use Plan was further split by Retail Development Potential (Retail_pot), Office Development Potential (Off_pot) and/or Industrial Development Potential (Ind_pot). Retail, Office and Industrial Development Potential was calculated by using existing ratios of retail, office and industrial development to total commercial development in commercial zoning classifications (O-1, O-2, C-2,

C-3, C-4, C-5, I-1, I-2, I-3), and applying that ratio to the Commercial Development Potential (Com-poten) for each parcel. Please note that the square footage shown for Retail, Office and/or Industrial Development Potential is part of the total square footage shown for Commercial Development Potential. See attachment D-1f.

- **"Midpoint" Development Potential** – A "midpoint" estimate of development on a parcel-by-parcel level was also developed for the Transportation Department. Midpoint is defined as the halfway point in residential development between the number of Chesterfield County dwellings as of December, 2001 and the total residential development potential of the County at build out.

Growth Phasing Analysis - Development Potential Database
Example Fields Used For Growth Potential Calculation

100+ Fields →

GPIN	Existing Land Use	Acres	Population	2001 Units	Zoning	Zoning Condition	Dev. Factor	Land Use Plan	Use Code	Sq. Footage	Res. Dev. Potential (Units)	Com. Dev. Potential (Sq. Footage)	Retail Potential Sq. Footage
GPIN	Landuse_01	Acres	Population	2001Units	Zoning	Z_Cond	Dev_Factor	LUP	Use_Code	Sq_Foot			
6646620123	Water	500			R9						0	0	
6646620124	Utility	123			R12						0	0	
6646620125	Public/Semi Public	2			R40						0	0	
6646620126	Vacant	100			A		1.88	Res 4.0			188		
6646620127	Vacant	25			A		10000	Lt. Ind.				250000	
6646620128	Vacant	50			R12	300					300		
6646620129	Vacant	100			R12		1.88				188		
6646620130	Vacant	25			I1	50000		Lt. Ind.				50000	
6646620131	Vacant	50			C3		5000	Comm.				250000	112500
6646620132	Single Family	0.2	3	1	R9		2.18	SF12			1		
6646620133	Single Family	20	#REF!		R12		1.88	SF12			#REF!		
6646620134	Multi Family	20		222	RTH			Multi			222		
6646620135	Mobile Home	25	138	55	MH1			Multi			55		
6646620136	Commercial	10			C3			Comm.	490	50000		50000	22500
6646620137	Industrial	12			I1			Lt. Ind.	390	100000		100000	

106,000+ Records

↓

As of 2/6/2004

Attachment D-1b

Individual Use Categories in Existing Land Use, Zoning and Land Use Plan Fields

Existing Land Use	Zoning	Land Use Plan
Commercial	A	Commercial
Hole	R-88	CMU
Industrial	R-40	Con/Rec
Mobile Home	R-25	Industrial
Multi-family	R-15	Lt. Ind.
Public/Semi-public	R-12	NMU
Single family	R-9	Office
Utility	R-7	Off/MU
Vacant	R-TH	Public
Water	R-MF	RMU
	MH-1	Res 0.5
	MH-2	Res 1.0
	O-1	Res 1.5
	O-2	Res 2.0
	C-1	Res 2.5
	C-2	Res 4.0
	C-3	Res 7.0
	C-4	Res 7.0 Plus
	C-5	RC
	I-1	Water
	I-2	
	I-3	

Uniform Land Use Plan Categories **Attachment D-1c**

Code	Title	Legend	Equivalent Zoning
1	**Rural Conservation**	Primarily limited to agricultural and forestall uses with isolated single family residences on parcels of five acres or larger. Uses appropriate in circumstances that ensure compatibility with existing and/or anticipated area development include places of worship, public schools, parks and other similar public and semi-public facilities. Planned development should be deferred until adequate provision is made for public water and sewer, road improvements and other public facilities.	A
2	**Residential** (0.5 or less dwelling per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities.	R-88
3	**Residential** (One or less dwelling per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities.	R-88 R-40
4	**Residential** (1.5 or less dwellings per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities.	R-25 (proffered density restrictions)
5	**Residential** (2.0 or less dwellings per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities.	R-40 R-25 (proffered density restrictions)
6	**Residential** (2.5 or less dwellings per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities.	R-15 (proffered density restrictions)
7	**Residential** (4 or less dwellings per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities.	R-25 R-15 R-12 (proffered density restrictions)
8	**Residential** (7 or less dwellings per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities.	R-12 R-TH R-MF (proffered density restrictions)
9	**Residential** (7 or more dwellings per acre)	Residences, and under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks and other similar public and semi-public facilities. Housing types that could be developed at this density include patio and zero-lot line houses, townhouses, multi-family units, or other alternative residential configurations.	R-MF R-TH MH-1 MH-2

Code	Title	Legend	Equivalent Zoning
	Neighborhood Office **(Not shown on plan)**	Limited professional and administrative offices and similar uses developed as transitions between commercial/industrial uses and existing or anticipated residential neighborhoods. These uses should be located along minor arterial or collector streets, but not at arterial road intersections.	O-1
10	**Office/Residential Mixed Use**	Professional and administrative offices, along with residential developments of varying densities. Supporting retail and service uses would be appropriate when part of a mixed use center of aggregated acreage under a unified plan of development and when located with access to intersecting transportation corridors. Such development should extend approximately 1,000 feet from the major road; however, existing natural or man-made boundaries (such as bodies of water, floodplains, rights-of-way, access locations or utility corridors) are preferable to an arbitrary depth such as 1,000 feet.	R (various) R-MF R-TH O-2
11	**Office**	fessional and administrative offices. Supporting retail and service uses would be appropriate when part of a mixed use center of aggregated acreage under a unified plan of development and when located with access to intersecting transportation corridors.	O-2
	Convenience Commercial **(Not shown on plan)**	Limited retail, service and office uses mainly serving nearby neighborhoods or rural locations. These uses should be located between residential neighborhoods and higher intensity uses at the intersection of two collector streets, or where a collector street intersects an arterial road. In developing areas, these uses should be planned in conjunction with new residential projects.	C-1
12	**Neighborhood Mixed Use** **(Neighborhood Mixed Use Center or Node)**	Neighborhood-oriented commercial uses, including small shopping centers, service and office uses that serve neighborhood-wide trade areas. Neighborhood-oriented commercial uses, including small shopping centers, service and office uses that serve neighborhood-wide trade areas. Locations should provide surrounding neighborhoods with convenient access to groceries and other frequently needed retails goods and services. The size and location of centers, and the mix of uses, should be determined in part by market area, availability of adequate access to the transportation system, and availability and suitability of land. In general, however, neighborhood-oriented mixed use centers should be between twenty and forty acres in size and be located on one corner of the intersection of two major arterial roads or on one corner of the intersection of a major arterial road and a collector road. Intersections should be analyzed to determine which quadrant is best suited (through detailed analysis of land assembly, access, impact on established or residents or other significant factors) for a center, and the center should be located only on the superior site. Small scale offices, day care facilities or other similar uses should be incorporated into the overall design of the center to provide transition to adjacent neighborhoods.	C-2
13	**Community Mixed Use** **Community Mixed Use Center or Node**	Community scale commercial uses, including shopping centers, service and office uses that serves community wide trade areas, and higher density residential development. Community scale commercial uses, including shopping centers, service and office uses that serves community wide trade areas, and higher density residential development. The size and location of centers, and the mix of uses, should be determined in part by market area, availability of adequate access to the transportation system, and availability and suitability of land. In general, however, community-scale mixed use centers should be between fifty and seventy-five acres, be located at the intersections of major arterial roads. Intersections should be analyzed to determine which quadrant is best suited (through detailed analysis of land assembly, access, impact on established or residents or other significant factors) for a	C-3

Code	Title	Legend	Equivalent Zoning
		center, and the center should be located only on the superior site. Commercial uses should be located at one corner of the intersection and be surrounded by office and residential use transitions.	
14	**Commercial**	General commercial uses, including automobile-oriented uses and light industrial uses, light industry and higher density residential development.	C-5
15	**Regional Mixed Use**	Integrated office, regional shopping center, higher density residential and light industrial park uses incorporated into a mixed use center of aggregated acreage under a unified plan of development and located with access to intersecting transportation corridors.	R-TH R-MF C-4 I-1
	Regional Mixed Use Center or Node	Integrated office, regional shopping center, higher density residential and light industrial park uses incorporated into a mixed use center of aggregated acreage under a unified plan of development and located with access to intersecting transportation corridors. The size and location of centers, and the mix of uses, should be determined in part by market area, availability of adequate access to the transportation system, and availability and suitability of land. In general, however, neighborhood-oriented mixed use centers should be between 700 and 1,000 acres in size. Uses should be designed and arranged to provide less intense, land use transitions between higher and lesser intensity uses.	
16	**Light Industry**	Offices, warehouses and light industrial uses, including research and development uses and light manufacturing dependent upon raw materials first processed elsewhere. Moderate industrial uses may be appropriate when designed, located and/or oriented to ensure compatibility with less intense uses, and where appropriate access and transitions are provided.	I-1 I-2
	Regional Employment Center	Corporate office, research and development, and light industrial uses on acreage of sufficient size to allow a large scale unified plan of development. Moderate industrial uses may be appropriate when designed, located and/or oriented to ensure compatibility with less intense uses, and where appropriate access and transitions are provided. Retail and service uses that serve primarily surrounding permitted uses may be appropriate when part of a larger industrial and/or office development.	I-1 I-2 O-2
17	**Industrial**	Manufacturing uses processing raw materials, heavy warehousing and trucking terminals. Heavy industrial uses should be located and designed to minimize impacts on existing and anticipated area development of lesser intensity.	I-2 I-3
18	**Public**	Under circumstances that ensure compatibility with existing and/or anticipated area residential development, places of worship, schools, parks, cemeteries and other similar public and semi-public facilities. Should such land be redeveloped for other uses, the appropriate uses would be those that are compatible with surrounding existing or anticipated development.	
19	**Conservation/Passive recreation**	Under circumstances that ensure compatibility with existing and/or anticipated area residential development, publicly owned land or land held in public or private trust for the purpose of preserving and promoting its natural function, character and/or historic significance (such as floodplains, wildlife habitat conservation areas, historic sites, etc.). Public access for passive recreational purposes may also be appropriate. Should such land be transferred to private ownership or other uses, the appropriate uses would be those that are compatible with surrounding existing or anticipated development.	

Attachment D-1d

Development Factors

Version: Lumod01

Land Use Plan Classification	Land Use Plan Development Density	Zoning Classification	Zoning Development Density
Rural Conservation	0	A	0
Residential (0.5 or less dwelling per acre)	.39 Units	R-88	.39 Units
Residential (1 or less dwelling per acre)	.58	R-40	.58
Residential (1.5 or less dwellings per acre)	1.0*	R-25	.69
	-	R-15	1.06
Residential (2.0 or less dwellings per acre)	1.5*	-	-
Residential (2.5 or less dwellings per acre)	1.88	R-12	1.88
Residential (4 or less dwellings per acre)	1.88	R-12	1.88
	-	R-9	2.18
	-	R-7	2.57
Residential (7 or less dwellings per acre)	3.18	R-TH	3.18
Residential (7 or more dwellings per acre)	8.04	R-MF	8.04
	-	MH-1	5.52
	-	MH-2	5.45
Neighborhood Office (Not shown on plan)	5000 Sq. Ft.	O-1	5000 Sq. Ft.
Office/Residential Mixed Use	9000	O-2	9000
Office	9000	O-2	9000
Convenience Commercial (Not shown on plan)	5000	C-1	5000
Neighborhood Mixed Use	6500	C-2	6500
Community Mixed Use	7000	C-3	7000
Commercial	6500	C-5	6500
Regional Mixed Use	8500	C-4	8500
Light Industry	10000	I-1	10000
Industrial	4000	I-2	4000
	-	I-3	5500
Public	-	-	-
Conservation/Passive Recreation	-	-	-

*Special adjustment not associated with an equivalent zoning classification.

As of 5/15/03

Chesterfield County Development Potential Database (DPD)
Database Key

Version: Lumod01 (As of 12/31/01)

Note: The DPD contains numerous "base" fields; most left in place from CALIAS, the Dept. of Real Estate Assessments system. Not all of CALIAS fields are listed here. Key database fields are listed below:

Field Name	From	Comments
Tax_ID	Calias	Data as of 12/31/01 from Real Estate Assessor
Mpn	Calias	Old map-parcel number
Gpin	Calias	GPIN number
Houseno	Calias	House number
Streetname	Calias	Street name
Streettype	Calias	Street type – ie. St., Rd., Ln.
Streetdir	Calias	Direction – ie. North
Zipzip	Calias	Zip Code
Subnum	Calias	Subdivision number
Landuse_01	Steve	Existing Land Use as of 12/31/01
Acres	Steve	Acres calculated from GIS
Mf_mh_unit	Bill H.	Number of Multi-family or Mobile Home units on a parcel as of 12/31/01
Mf_mh_pop	Bill H.	Estimated population in each MH park or MF complex as of 12/31/01
Mfmhcode	Bill H.	Code number assigned to MH parks and MF complexes as of 12/31/01
Population	Bill H.	Total population est. per parcel as of 12/31/01
Group_quar	Bill H.	Group quarters population per parcel as of 12/31/01
2001units	Glenn	Number of units per parcel as of 12/31/2001
Zoning	GIS Layer	Zoning classification as of 12/31/01
Z_cond	Glenn	Parcels associated with zoning cases that have a condition setting a maximum residential (units) or commercial (building sq. footage) development
Dev_factor	Glenn	Development Factor calculated from recent density ratios (see accompanying table)
Lup	Sara	Land Use Plan as of 12/31/01
Use_code	Bill	Commercial use code
Sq_feet	Bill	Commercial/Industrial sq. footage per parcel as of 12/31/01
School_capacity	Bill	Capacity of public and private schools as of 12/31/01
Res_poten	Glenn	Number of dwellings that potentially could go on a parcel based on existing units, zoning and the land use plan. Also commonly referred to as “build-out.”
Com_poten	Glenn	Amount of commercial building square footage that potentially could go on a parcel based on existing commercial uses, zoning and the land use plan. Also commonly referred to as “build-out.”
Retail_Poten	Glenn	Amount of retail building square footage that potentially could go on a parcel based on existing land use, zoning and the land use plan. **Note**: The value in this field is part of the total potential commercial square footage shown in Com_poten.
Off_Pot	Glenn	Amount of office building square footage that potentially could go on a parcel based on existing land use, zoning and the land use plan. **Note**: The value in this field is part of the total potential commercial square footage shown in Com_poten.
Ind_Pot	Glenn	Amount of industrial/warehouse building square footage that potentially could go on a parcel based on existing land use, zoning and the land use plan. **Note**: The value in this field is part of the total potential commercial square footage shown in Com_poten.
Study Area	Glenn	Growth Phasing Analysis Study Area boundaries
Mid_Res	Glenn	Number of dwellings that potentially could go on a parcel based on existing units, zoning and the land use plan in a Midpoint scenario approximately halfway between the number of units existing on December 31, 2001 and projected build out.
Mid_Comm	Glenn	Amount of commercial square footage that potentially could go on a parcel based on existing commercial square footage, zoning and the land use plan in a Midpoint scenario approximately halfway between the amount of commercial square footage existing on December 31, 2001 and projected build out.
Mid_Retail	Glenn	Amount of retail building square footage that potentially could go on a parcel based on existing land use, zoning and the land use plan in a Midpoint scenario. **Note**: The value in this field is part of the total potential commercial square footage shown in Mid_com.
Mid_Off	Glenn	Amount of office building square footage that potentially could go on a parcel based on existing land use, zoning and the land use plan in a Midpoint scenario. **Note**: The value in this field is part of the total potential commercial square footage shown in Mid_com.

		Mid_com.
Mid_Ind	Glenn	Amount of industrial/warehouse building square footage that potentially could go on a parcel based on existing land use, zoning and the land use plan in a Midpoint scenario. **Note**: The value in this field is part of the total potential commercial square footage shown in Mid_com.
Percentile	Glenn	All records with future growth potential are assigned a percentile value of 1 through 10 based on a projection of the progression of development within their designated study area.
Res Per	Glenn	A breakdown of identified records with residential future growth potential broken down by percentile (a subset of "Percentile")
Com Per	Glenn	A breakdown of identified records with commercial future growth potential broken down by percentile (a subset of "Percentile")
Fields S1A through S4.10	Glenn	Growth scenarios.

Attachment D-1f
Use Code Key

Class	Code	Description
	100	APARTMENT
	110	AUTOMOTIVE CENTER
R	120	AUTOMOBILE DEALERSHIP
	130	BANK
	140	BOWLING CENTER
	150	CAR WASH
	160	CEMETARY
	170	CHURCH
	180	COLLEGE
	190	COMMUNICATION CENTER
	200	COMMUNITY RECREATION
	210	COMPUTER CENTER
R	220	CONVENIENCE STORE
	225	CORRECTIONAL INSTITUTION
	230	COUNTRY CLUB
	240	DAY CARE CENTER
R	250	DEPARTMENT STORE
R	260	DISCOUNT STORE
I	270	DISTRIBUTION WAREHOUSE
	275	EQUIPMENT STQRAGE BLDG
	280	FAST FOOD RESTAURANT
	290	FRATERNAL BUILDING
	300	FIRE STATION
	310	FUNERAL HOME
	320	GOLF COURSE
	325	GROUP HOME
	330	HANGER
	340	HEALTH CLUB
	345	HIGHWAY MAINT. FACILITY
	347	HISTORICAL PROPERTY
	350	HOSPITAL
	360	HOTEL
I	370	INDUSTRIAL ENGINEERING
I	380	INDUS. MANUFAC.<50000 SQFT
I	390	INDUS.MANUFAC.>50000 SQFT
	400	LANDFILL
	405	LAUNDROMAT
	410	LIBRARY
R	420	MARKET
R	425	MARKET (RURAL)
O	430	MEDICAL OFFICE
I	440	MINING/PROCESSING PLANT
	447	MINI GOLF/DRIVING RANGE
	450	MINI WAREHOUSE
	455	MISC. IMPROVEMENTS
	460	MOBILE HOME PARK
	470	MOTEL
	475	NEIGHBORHOOD RECREATION
	479	NURSERY (GARDEN)
	480	NURSING HOME
	481	ASSISTED LIVING FACILITY
O	490	OFFICE-CLASS C
O	491	OFFICE-CLASS A
O	495	OFFICE-CLASS D
O	500	OFFICE CONDOMINIUM
I	510	OFFICE/WAREHOUSE
	520	PARKING DECK
	525	PARKING LOT (SURFACED)
	530	POST OFFICE
	540	RADIO/TELEVISION STATION
	550	RECREATIONAL PARK
	555	RESCUE SQUAD
	558	RESIDENCE (CONVERTED)
	559	RESIDENTIAL - SD
	560	RESTAURANT
R	570	RETAIL STORE
R	571	RETAIL/SERVICE (RURAL)
	580	RETIREMENT -'HOME
	585	SCC PROPERTY
	590	SCHOOL
	600	SERVICE GARAGE
	610	SERVICE STATION
	620	SEWAGE TREATMENT PLANT
	622	SEWAGE PUMPING STATION
R	630	SHOPPING CENTER
	640	SKATING RINK
	650	STORAGE TANK FACILITY
	660	STORAGE WAREHOUSE
	670	TENNIS /RACQUETBALL
	675	TERMINAL, AIRPORT
	676	TERMINAL, RAILROAD
	680	THEATER
	690	TOWER
	700	TRUCK TERMINAL
	710	USED AUTOMOBILE SALES
	720	VETERINARY HOSPITAL
	730	WATER TANK
	740	W'ATER TREATMENT PLANT
	742	WATER PUMPING STATION

I = Industrial
O = Office
R = Retail

Appendix D-2b(1)

Fire Stations Methodology

Level of Service Standards:

Adopted level of service standards (1995 Public Facilities Plan):

1. Fire responses in the urban area should have a first response of 6 minutes or less.
2. 90% of EMS calls should have a first response of 6 minutes or less.

Methodology:

1. To determine the existing gap for service, the developable area of the county was analyzed to find what parts of the county can be theoretically served by the existing stations. For the six minute response time standard, the fire department allows one minute for dispatching the call, one minute for preparation, and four minutes of drive time. The analysis centered upon four minute drive time service areas from existing stations. Additional stations were then placed on the map until the majority of the developable area was served by a station. There are gaps in service areas where there are few calls per year (typically under 250), or where there is not an efficient station location to serve the call load.
2. For areas with gaps in service, multiple locations were analyzed to determine the locations that would provide the greatest efficiency in responding to call loads, while recognizing existing problem areas in the service network.
3. The stations added into the system to fill the existing gap do not cover all geographic areas of the county. The Rural Conservation area is not covered, as well as several geographic areas that are on the fringes of multiple station service areas, are difficult to serve efficiently, or currently have very low call loads.
4. For the growth scenarios, an average call load per household was determined. It is based upon existing call loads for the last three years. See below for a chart of call load statistics and a further explanation of average call per household methodology.
5. Future call load projections are based upon residential growth. The Growth Potential Projections were used to create population projections* for each GPA geography.
6. To find the need for future fire stations, the population projections were multiplied by the per capita call load. Fire Department policy, which has been codified through the PFP, states that fire stations are at full capacity once they reach 1,000 calls per year.
7. As needs for a fire station in a growth percentile reach approximately one station (1,000 calls per year), the geographic area with the greatest need is assigned that facility.

Need for a facility was based upon two factors:

1. The existing gap or surplus in available stations, including those stations designated to fill the existing service gap.
2. The additional population, or call load, that was added to that point in development of each GPA geography.

Typically, a facility was not assigned to a GPA geography unless there was a need for at least half of a facility in that area.

Findings:

Current Situation:

- 17 existing fire stations respond to over 25,000 calls per year, with most stations over the 1,000 calls per year standard for a station working at capacity.
- Three stations are currently planned through the CIP (Rivers Bend, Winterpock and Reams Road) and in various stages of the build process.
- Eight volunteer rescue stations respond to 7,000 to 8,000 calls per year, handling only the EMS side of the service equation.
- To meet the existing level of service standard, the county requires an additional two fire stations, beyond those funded in the Capital Improvements Program.

Build Out:

At build out, the county needs 37 additional fire stations. This is in addition to the 17 existing, the three in progress, and the two to fill the current gap in service.

Average Call Load Methodology:

The following chart shows the number of calls that were taken by the Fire Department and by the volunteer rescue stations. For effective planning, volunteer calls must be included, as the volunteer participation in the system is declining annually.

Year	# of Fire Dep't calls	# of Volunteer calls	Total
1999	25,523	8,002	33,525
2000	25,879	7,437	33,316
2001	26,519	7,291	33,810

This may cause some double counting, since some calls receive both a Fire Department and a volunteer rescue response, but gives a more accurate reflection of the system needs.

Total calls were then divided by population to determine the per capita responses to calls for service for each year. The average of the last three years was used.

Year	# calls	Population	Per capita calls
1999	33,525	254,200	.1319
2000	33,316	258,500	.1289
2001	33,810	264,000	.1281
Total/Average	100,651/33,550	776,700/258,900	.1296

* See population projection methodology.

Appendix D-2b(2)

Library Methodology

Level of Service Standards: Adopted level of service standards (1995 Public Facilities Plan): .6 square feet/capita

Methodology:

1. December 31, 2001 population data for each GPA geography is multiplied by the adopted level of service standard (.6 square feet). This was compared to the existing square footage of all libraries combined to determine the existing gap or surplus for library facilities.
2. Where a gap is found, facilities are added if the gap is large enough to justify the additional of a full facility.
3. Library sizes, by policy, have been limited to 20,000 square feet, so for future branches and expansions of existing branches, no facilities will exceed this size.
4. The Growth Potential Projections were used to create population projections* for each GPA geography.
5. The projections were multiplied by the adopted level of service standard (.6 square feet per capita) for each geography and growth percentile.
6. As needs for a library in a growth percentile reach approximately one library (20,000 square feet), the geographic area with the greatest need is assigned that facility.

Need for a facility was based upon two factors:

1. The existing gap or surplus in available square footage, compared to the level of service standard.
2. The additional population, or square footage need, that was added to that point in development of each GPA geography.

Typically, a facility was not assigned to a GPA geography unless there was a need for at least half of a facility in that area.

Findings:

Current Situation:

- Nine libraries exist totaling 133,800 square feet.
- To meet the existing level of service standard, the county requires 157,265 square feet
- This leaves a 23,465 square foot deficit in library space.
- To fill existing gap in level of service standard, one library at 20,000 square feet is needed, leaving a 3,465 square foot gap in service levels.

Build Out:

At build out, the county needs seven additional libraries at 20,000 square feet each. These branches include five branches that have been specifically delineated in the libraries long term planning: Magnolia Green, Powhite/Genito, Winterpock, Harrowgate, Huguenot-Robious. There are two additional branches that will be needed that have not been mentioned in previous plans for libraries: a southern branch, west of Matoaca, and a branch along 288, near the center of the county. Finally, seven existing branches will are recommended for expansions in the existing

Public Facilities Plan: Meadowdale, Enon, Ettrick/Matoaca, Clover Hill, Bon Air, Midlothian, and Central. Expansions at some of these facilities may be difficult of cost prohibitive, and may be carried out at other branches. However, for the purposes of this project, the guidance of the adopted PFP was followed.

* See population projection methodology.

Appendix D-2b(3)

Parks Methodology

Level of Service Standards:
Adopted level of service standard (1995 Public Facilities Plan):

- Community Park Acreage: .002 acres per capita
- Regional Park Acreage: .0045 acres per capita
- Overall Park Acreage:

Methodology:

1. December 31, 2001 population data for each Growth Analysis geography is multiplied by the adopted level of service standard (dependant on type of park). This was compared to the existing park acreage of each type (as determined by Parks and Recreation Department in the Parks and Recreation Master Plan).
2. Where a gap is found, facilities are added if the gap is large enough to justify the additional of a full facility.
3. Park sizes were based upon the range of acreages found in the Public Facilities Plan (PFP), with guidance from Parks and Recreation staff as to current trends on size.

Park Type:	Recommended Acreage (PFP):	Park staff recommendation:
Community	20-50	50* acre minimum
Regional	100-500	250 acre minimum

4. The Growth Potential Projections were used to create population projections** for each Growth Analysis geography.
5. The projections were multiplied by the adopted level of service standard (dependant upon type of park facility) for each geography and growth percentile.
6. As needs for a park in a growth percentile reach approximately one facility (either 50 acres or 250 acres), the geographic area with the greatest need is assigned that facility.

Need for a facility was based upon two factors:

1. The existing gap or surplus in available acreage, compared to the level of service standard.
2. The additional population, or acreage need, that was added to that point in development of each Growth Analysis geography.

Typically, a facility was not assigned to a Growth Analysis geography unless there was a need for at least half of a facility in that area.

Findings:
Current Situation:

- There are eleven community parks totaling 421 acres, 6 regional parks totaling 1,161 acres, and 69 other facilities totaling 1,739 acres.
- To meet the existing level of service standard for community parks, three additional parks totaling 100 acres are required. There is a small deficit for regional scale parks (12 acres), but not a large enough gap to justify an additional regional park. There is a surplus of overall park acreage.

Build Out:
At build out, there will be a need for 12 additional 50-acre community parks. Additionally, there will be a need for five regional parks, varying in size between 260 and 284 acres. Park locations as build out occurred were based upon need in the different Growth Analysis geographies. There are locations where the calculations showed a clear need for park space, yet space will be difficult to obtain. Under those circumstances, the facility need/cost is still placed within the geography with the need.

* Park staff prefers community park acreages in the 80-100 acre range. However, that acreage is out of the range supported by the Public Facilities Plan, so the maximum acreage in the range was used.
** See population projection methodology.

Appendix D-2b(4)

Schools Methodology

Level of Service Standards:

- One child for every seat available: capacity is determined each year by the school systems, based on programs and space available at each school.
- No schools in the system should exceed 120% capacity.
- Optimal school sizes are as follows:
  - Elementary: 700-750 students
  - Middle: 1200 students
  - High: 2000 students

Methodology:

1. Average student yield was determined for the county, as of December 31, 2001. Student yield for this project took the overall number of students in the county, and determined the average number of students per household. Students were portioned evenly into elementary, middle and high school students, based upon the number of grades for each school type (see below for additional information on student yield and projections).
2. End of calendar year 2001 student data is compared with school year 2001-2002 school capacity figures. This comparison is the basis for the "gap" figures. For the purposes of the Growth Analysis, high school and middle school capacity are reviewed countywide. Elementary schools were placed into pods to review capacity. The pods were closely associated with the planning areas used in the adopted PFP.
3. Where the comparison between capacity and 2001 student data generated the need for a full facility, one was added. For schools, there was a "gap" of one elementary school.
4. The Growth Potential Projections were then used to create student projections for each Growth Analysis geography based upon the average student yield figures. These student yield figures, combined with the projections, generated the need for facilities.
5. For high and middle schools, capacity was reviewed countywide. Needs for facilities were based on numbers of students generated at each percentile. Generally, a facility is added at the percentile where the need equals one facility. Because facilities are not evenly distributed, there are areas and growth scenarios where schools are added as soon as any population is added to that geography.

Need for a facility was based upon two factors:

1. The existing gap or surplus in available square footage, compared to the level of service standard.
2. The additional housing units added multiplied by the student yield figures to determine the necessary number of seats for each Growth Analysis geography.

Typically, a facility was not assigned to a Growth Analysis geography unless there was a need for at least half of a facility in that area.

Findings:

Current Situation (12/31/01):

- There is an existing gap equivalent to one elementary school. The system, as a whole, has enough capacity, but there is not enough capacity where the need exists.
- There is no existing middle or high school gap.

Build Out:

At build out, there will be a need for 31 additional elementary schools. For middle schools, there will be a need for 11 new schools (one assumed to be the renovation of Clover Hill High School into a middle school). Chesterfield County will also require nine new high schools (including the assumed replacement for Clover Hill High School).

Note: At the time the Growth Analysis Model projection was developed in mid 2003, it assumed that the renovation of the current Clover Hill High School as a middle school. This is not included in the proposed 2004 update to the county's Public Facilities Plan. Please see the "Important Considerations" section of the Growth Report Introduction for more information about the relationship between these two reports.

Other Methodology Notes:

Future student yield issues:

- Future dwelling unit projections do not differentiate between types of housing that are built. Therefore, any future student yield calculations must be average yield calculations. This fits with the overall methodology of the project that assumes that the overall housing mix of the county will remain the same.
- The 18 different Growth Analysis areas have a wide distribution for student yield. Due to the large variation, a determination for what number to use for projecting student yield was required. When looking at the four areas of the county that are closest to build-out (areas 1, 4, 6, and 8), the variation is much lower, and very close to the countywide average student yield. Since the average for these mostly built-out areas is so close to the county average, the average is what will be used for determining student projections.

Methodology for Projections:

The average student yield was found for total students in the county. In order to smooth out the population distribution of students in each grade level, the average student yield was divided by 13 (for the total number of grades). This number was then multiplied by the number of grades in each school type (6 for elementary, 3 for middle, and 4 for high) to determine the yield to be used for projections of each school type.

This creates the following numbers to be used for long-term student projections:

School Type	Projection Multiplier
Elementary	0.2255
Middle	0.1128
High	0.1504

High Schools:

- Assume replacement of Clover Hill High School, with an additional 1,000 students accommodated through the replacement. As CHHS is replaced, it will become a middle school. (This assumption is based on discussions with Sachool Board staff in the spring of 2003.)

Middle Schools:

- Old Matoaca HS capacity is counted as 700 seats for the model.
- Current Clover Hill HS capacity is counted as 1200 students when the renovation occurs.

* See population projection methodology.

Appendix D-2b(5)

Water and Wastewater Methodology

Level of Service Standards:

Virginia Health Department Waterworks Regulations
Virginia Department of Environmental Quality SCAT Regulations
Chesterfield County Utilities Department Water and Sewer Specifications

Methodology:

1. The Chesterfield County Utilities Department's Water and Wastewater Facilities Plan was used as the backbone for future water and wastewater improvements. The size and location of the major water and wastewater improvements in the Chesterfield County Utilities Department's Water and Wastewater Facilities Plan where incorporated into the Growth Phasing Analysis.
2. The Growth Potential Projections were used in conjunction with water and wastewater duties[1] to calculated the future water and wastewater demands. The size water and wastewater lines needed to serve these demands were than calculated. The location of the water and wastewater lines, were determined using standard engineering practices.
3. The cost of the water and wastewater lines was determined by using size and length of the water or wastewater line and water and sewer cost estimator.
4. The cost for internal water distribution and wastewater collection lines in future subdivision were determined by using an average cost per lot for internal water distribution and wastewater collection lines multiplied by the number of projected lots in the future subdivision.
5. Timing for major system wide water or wastewater improvements were based on the population projections in conjunction with per capita water and wastewater demands.

[1] Water and wastewater duties are the average water demand and wastewater flow generated by various residential, commercial and industrial land uses.

Appendix D-2b(6)

Transportation Methodology

Level of Service Standards:

1. Road needs were calculated based on following capacities:
    a. Non-Freeways
        i. 0 – 8,000 vpd – No improvements
        ii. 8,001 – 15,000 vpd – Provide shoulders and minor widening for 2 lane road
        iii. 15,001 – 26,550 vpd – Provide 4 lane road
        iv. 26,551 – 39,750 vpd – Provide 6 lane road
        v. 39,751 and greater vpd – Provide 8 lane road

    b. Freeways
        i. 0-58,000 vpd – Provide 4 lane road
        ii. 58,001 - 87,000 vpd – Provide 6 lane road
        iii. 87,001 and greater vpd – Provide 8 lane road

2. Roads excluded where Board has determined no improvements desired.

Methodology:

- Planning Department provided land use projections for the study scenario.
- Land use projections were used to develop variables (population, dwelling units, retail employment, total employment, total school attendance) required to run MINUTP transportation model.
- MINUTP generated traffic volumes for each link in the transportation network (basically the county thoroughfare plan).
- The costs of the road improvements to accommodate the generated traffic volumes were calculated based on the level of service standards and current highway construction costs.
- Costs to improve existing roads were classified public costs, costs to construct future thoroughfare roads classified private costs.
- “Smoothing” of improvements was not performed.
- Alternate transportation networks were not tested.
- Future VDOT allocations were not considered.

Findings:

- Cost to address total existing needs $1.2 billion.
- Cost to address scenario build out needs: $2.2 billion public, $0.9 billion private.

Appendix D-2b

Population Projection Methodology

Population projections were necessary to determine facility needs for all major county facilities. For example, libraries needs are based on a per capita level of service standard of .6 square feet per capita.

Numbers of housing units at each percentile of growth are determined in the percentage matrix. These numbers are multiplied by 2.55839 to find the population generated at each growth percentile.

The persons per household of 2.55839 assumes the following:

- 16.5% of all households are multi-family units.
- 83.5% of all households are single family units.
- A multi-family household generates 2.196 people.
- A single family household generates 2.63 people.

These figures are consistent with projections that county staff has used in the past for 2020 population.